NEW YORK • LONDON

WORLD PETROLEUM

New Petroleum Era In France • Waste and Production Control • Soviets Face Serious Marketing Problem • Compulsory Adulteration of Motor Fuel • Germany's Oil Industry In Perspective • Jersey Standard States Tariff Position •

MAY · 1931

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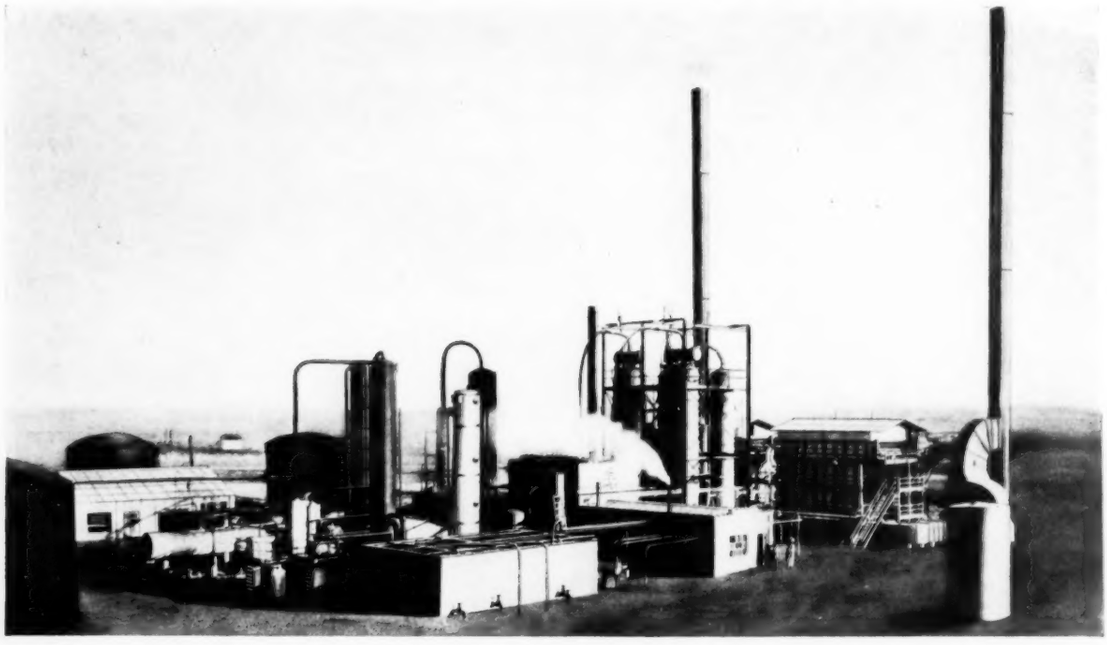

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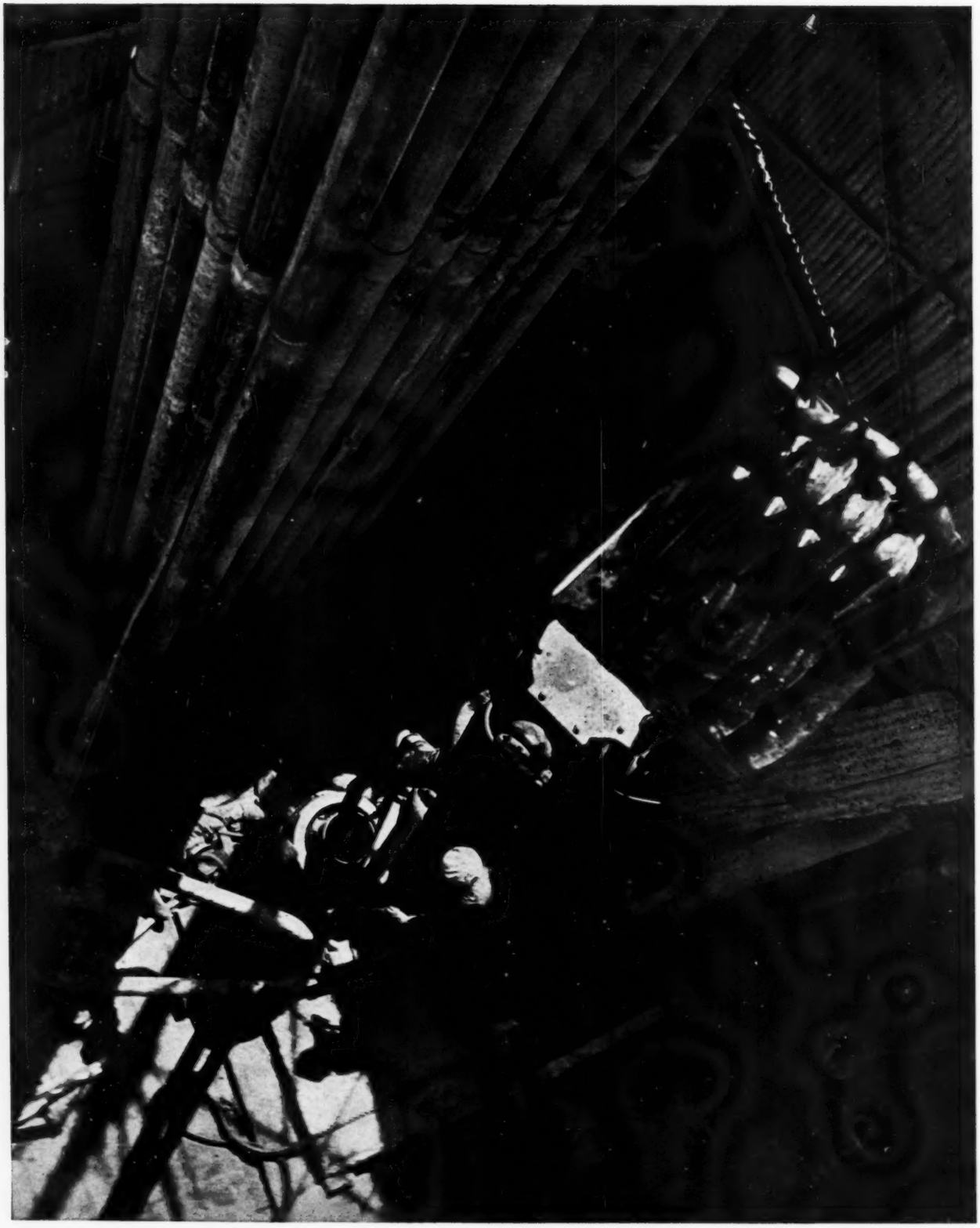


Pulling Casing by Will Connell

NEW YORK • WORLD • LONDON

PETROLEUM

Anent Domination

READERS of American newspapers are over-familiar with the headline "Independents Charge Big Companies with—," in England it is the "combine." The word trust is not so freely used as of yore, but the implication is that in some mysterious way the larger companies dictate the course of the industry. There has not been for a number of years anything remotely resembling an oil trust. Neither any one concern nor any agglomeration of companies dominates this industry.

It would be difficult to cite a business which is more intensely competitive, and in which so little progress has been made in keeping competition within even reasonable bounds. The facts being what they are those who talk about the domination by the big companies can safely be supposed to be doing so purely for the sharp political edge which the phrase puts on their proposals.

▼

Too Much Publicity

A DENUNCIATION of financial bureaus for their practice in issuing frequent surveys of petroleum stocks was recently penned by Warren C. Platt, able and energetic publisher of the National Petroleum News of Cleveland, Ohio, U. S. A. We agree with Mr. Platt. He might have gone further and stated flatly that there is altogether too much about the industry published in the daily press. Sad to relate most of this material emanates from the industry itself.

In America at any rate, the petroleum industry is an overpublicised business. In recent years the discussion of the oil problem has been lifted from the trade press into the newspapers. We doubt that this has helped the industry or benefited the investing public.

It may be argued that oil has become such an article of general use that everything about it has become a matter of public concern. However, the oil companies—even the most conservative—have deliberately whetted the public appetite for such information. Practically every large oil company issues its monthly house organ, ostensibly for the information of stockholders and employees; matter from these journals is habitually released to the daily papers.

We know of no more efficient and well balanced organization than the American Petroleum Institute. We are not criticising that organization when we raise the question of whether its policy in releasing frequent detailed statistics covering the industry has been helpful in the long run. We know of no other industry which goes so far in the direction of publishing frequent records of production, manufacture and inventory accumulations.

It is true that this industry has nothing to conceal. It is also true that to continually obtrude transient detailed figures on the public—particularly the investing public—is to confine its understanding of the industry purely to its statistical position and create an arbitrary and not altogether accurate gauge of its attractiveness as an investment.

We suggest that the time has arrived for leaders in the world of oil to turn their backs on the strife loving daily press. It has been the arena for settling the industry's differences too long. The sequence of thought presented to daily newspaper readers is generally: Price cuts, price wars, charges, countercharges, threats, boycotts and the good old reliable heading—"Independents Attack the Oil Trust."

The petroleum industry is well equipped with its own trade press, which provides an ample forum for the discussion of the problems of this industry. It is true that many of the oil journals confuse their readers with a mass of matter much of it trivial, some of it of interest only to machinery advertisers, a policy which this journal has been at some pains to avoid; but no one can gainsay the alertness of the oil press as a whole or its willingness to join helpfully in the solution of today's problems.

▼

Sir Henri in Bucharest

THE Roumanian sensation of the month, the visit of Sir Henry Deterding as the guest of King Carol, about which the wildest rumors were circulated on the continent, proved to be mainly a social function. He was royally received and invited to a review of the troops; but there were no tangible results of his visit. Sir Henry expressed, in an interview, exactly the same opinions he has been propounding for the last few years.

New Petroleum Era In France

Recent Constructive Legislation Puts Refining Industry On a New and Sounder Basis. Eleven Companies Now Will be Able to Build Plants.

By E. J. André

PETROLEUM legislation has made such strides in France during the past month that a feeling almost akin to unreality seems to hover over us. It is hard to believe, after so many years of deferred hope and expectation, that the agreement between the State and the C. F. P. is now an accomplished and "ratified" fact. However, not only is that so, but the licenses to import crude oil have actually been published by the JOURNAL OFFICIAL of April 4.

The petroleum industry, therefore, now stands upon a new and sounder basis. The eleven companies which have obtained these licenses will forthwith be able to build and organize their refineries, and the prevailing impression is that some useful work can now be accomplished towards equipping France with a new industry, a fact which causes general satisfaction in domestic oil circles.

Needless to say the agreements were not ratified by the Chamber without a severe fight. The discussion of the different clauses as submitted for ratification by the Mining Commission took up the best part of a week, and the final vote was carried at midnight, Friday, March 27, when only about 25 Deputies remained in the Chamber—this was the chief reason for the carrying of the vote. All that now remains to be done is to obtain the approval of the Senate; but it is not anticipated that there will be any opposition in the Upper House.

In its April issue last year WORLD PETROLEUM published an article under the heading 'French Petroleum Politics and the C. F. P.," containing a short explanation of the Agreements of 1924 and 1929 as they were then submitted for ratification to Parliament. Since that date a good deal of water has flowed under the bridge. In order to give the reader a clear conception of the C. F. P's present position it is necessary to enumerate, without going into intricate details, the most important changes that have taken place in the oil situation.

First a slight modification has been made in the agreement of May 17, 1924, which incorporated a clause for the State to turn over 23¾ per cent of the Iraq oil to the C. F. P. The State is now given a prior right to 80 per cent of the Company's finished products with a reduction of 2 per cent on the usual sales price. This could not be less than Frs. 8.- per ton. It is also stipulated that Clause 12 of the said agreement shall be open to revision after a period of twenty years.

This clause as it now stands and adopted, allows the C. F. P. and the C. F. R. to refine 25 per cent of the total of the declared yearly importations of refined products, instead of obligating the other companies to take over 25 per cent of their finished products. Finally, the State has reserved itself the right of subscribing to 35 per cent of the C. F. P's capital stock and retains the advantage of increasing the number of its votes by 5 per cent, in spite of the fact that a law was passed some time ago by which the right to plural votes was abolished in France.

The State is to be allowed a period of two months in which to decide, and to declare to the C. F. P., exactly what percentage of stock it intends to subscribe.

On the other hand no decision has yet been taken with regard to a State refinery, through the matter will come before the Chamber again at a later date, after the Minister of Finance has been told what expenditure such a refinery would mean to the State.

Such, very briefly, is the present position. It was said time and again during the discussions at the Chamber that a decision *must* be taken one way or another with regard to the ratification of the agreements. This was essential in order to enable the C. F. P. to know its position, and to give it the necessary authority to continue negotiations in France's name with the Iraq Petroleum Company. That aim is now achieved, and the C. F. P. will be able to hold its own, feeling that it has the French State behind it. It is to be hoped also that foreign and natioual oil policies will shortly be elaborated, although the recent discussions did not give the impressions that the French Government had any definite plans with regard to the future.

A petroleum policy was hardly ever mentioned during the course of those endless and rather useless debates. Had those in authority had a straight forward question put to them on that subject, they probably would have found it difficult to give a satisfactory reply. Most of the Deputies interested in the oil question appeared much more perturbed about what the State actually had to gain or to lose by her Agreements with the C. F. P., than by the thought that a clearly defined petroleum policy is absolutely essential for the welfare of the country, and that so far it has not got one.

Doubtless any criticism of the French Government and the French Chamber for the way in which they conducted petroleum affairs in this country, would be justified. It nevertheless is satisfactory to have a definite "status" where the C. F. P. is concerned, and to know that nothing can now retard the construction of the much talked of French refineries.

In this connection we give on the following page, a table which will enlighten the reader as to the apportionment of the liscenses to import crude oil which were published on April 4.

The license figures do not yet include the percentage which has been granted to the C. F. R. in virtue of its Agreement with the State. That will be dealt with later by a further decree after Senate has passed its vote upon the Agreement, and will be reported by WORLD PETROLEUM.

For the moment the C. F. R. is authorized to import, on its own behalf and on that of its affiliates (Desmarais Freres, Lille Bonnieres & Colombes, S. Champennoise des Carburants, S. Fse des Carburants, La Motoline, Les Consommateurs de Pétrole, S. Méridionad des Pétroles, S. d'Approvisionnement des Consommateurs d'Huiles Combustibles), enough crude oil to manufacture 4,354,-400 bbl. of products divided up

according to the following tabulation.

Import License of the C. F. R.

Product	Barrels
Gasoline	3,352,000
Refined Min. oils	427,000
Lubricating oils	280,000
Gas oil	295,400

There is no limitation to the quantities of paraffin, vaseline, fuels, road oils, etc., which the different companies may manufacture for the present. When the C. F. R. obtains its license to import 25 per cent of the total tonnage of products consumed by the French market, the two licenses together will make a total of 8,716,400 bbl., that is to say 4,311,600 bbl. more than the S. Franco Americaine de Raffinage, which hitherto held the biggest percentage, viz. 20.25 per cent.

Next on the present list come the S. des Pétroles Jupiter with 3,219,100 bbl. or 14.80 per cent; the S. Générale des Huiles de Pétroles with 1,940,000 bbl. or 8.92 per cent; the S. des Produits Chimiques et Raffineires de Berre with 1,717,250 bbl. or 7.89 per cent; the Vacuum Oil Company and the Cie. Industrielle des Pétroles with 1,634,000 bbl. or 7.51 per cent; the Raffinerie de Pétroles du Nord with 1,283,300 bbl. or 5.91 per cent; the Raffinerie de Pétrole de la Gironde with 1,271,800 bbl. or 5.85 per cent, the S. A. Brest Port Pétrolier with 928,100 bbl. or 4.26 per cent; the S. A. E. M. Pechelbronn with 838,500 bbl. or 3.86 per cent; and finally Les Consommateurs de Pétrole (which also figures in the Cie. Française de Raffinage) with 157,500 bbl. or 0.73 per cent. These percentages will naturally all be altered as soon as the special decree is published with regard to the C. F. R.'s share.

Although all oil interests are pleased that licenses have at last been granted, disappointment is general owing to the fact that the tonnage allowed to each one is not equal to that granted for the importation of refined products in 1929 and 1930. In view of the special advantages obtained by the C. F. R., no other solution to the problem appears to have been possible.

1931 French Import License Distribution Compared with 1929-30

Imports authorized by decrees of 1929-30 (In Barrels)					1930 imports. (Ref. Prod.) cos. grouped as in the 1931 Licenses	Beneficiaries of the Authorizations for: 1929-30	1931	Imports authorized by decrees of April 1931 (In Barrels)					
Gasoline	Ref. Min. Oils	Heavy Oils	Gas Oils	Totals				Gasoline	Ref. Min. Oils	Heavy Oils	Gas Oils	Total	Percent
.....	4,200	476,700	.....	480,900		Bedford							
2,720,800	362,250	.....	175,000	3,258,050		Economique	Sté. Franco-Amér. de Raffinage						
402,400	51,100	.....	17,500	471,000	5,156,550	Cie Générale des Pétroles	Raffinerie de Port-Jérôme (S.I.)	2,848,000	266,000	973,000	317,800	4,404,800	20.25
24 000	18,200	495,600	91,000	628,800		André Fils	Bond 22,250,000 francs						
.....	.....	317,800	.....	317,800		La Mailleraye							
2,121,600	494,900	8,400	18,200	2,643,100		Desmarais							
814,400	157,500	40,600	19,600	1,032,100		Lille, Bonnières et Col							
77,600	.....	.....	.....	77,600		Sté. Champen. des Carbur.	Cie Française de Raffinage						
520,000	.....	.....	.....	520,000		Sté. Franç. des Carburants	Raf. Gonfreville (S.I.)						
39,200	.....	.....	.....	39,200	4,839,000	La Metoline	et Martigues (B-du-R)	3,352,000	427,000	280,000	295,400	4,354,400	20.02
.....	.....	.....	.....	.....		(*) Consomm. de Pétrole	Bond 20,250,000 francs						
176,000	21,000	.....	.....	197,000		Sté Franç. des Combustib.							
176,000	21,000	.....	.....	197,000		Méridionale des Pétroles							
.....	.....	28,000	105,000	133,000		Sté. Appl. C. Huiles Comb.							
						Sté. des Pétroles Jupiter							
2,304,000	429,800	287,000	420,000	3,440,800	3,440,800	Raf. de Petit-Couronne (S.I.) et Pauillac (Gironde)		2,104,000	259,000	315,000	541,100	3,219,100	14.80
						Bond 12,650,000 francs							
						S.G.H.P.							
1,474,400	206,500	129,500	231,000	2,041,400	2,041,400	Raf. de Courchelettes (Nord) et Lavéra (B-du-R)		1,352,000	182,000	161,000	245,000	1,940,000	8.92
						Bond 10,250,000 francs							
254,400	21,000	9,800	17,500	302,700		Franco-Egyptienne	Prod. Chim. et Raf. de Berre						
376,000	21,000	21,000	35,000	453,000	755,700	Berre	Raf. de Berre (B-du-R)	1,264,000	122,500	210,000	120,750	1,717,250	7.89
							Bond 9,775,000 francs						
1,042,400	195,300	.....	29,400	1,267,100		C. I. P.	Vacuum Oil Co. et C. I. P.						
.....	.....	207,200	.....	207,200	1,956,900	Vacuum	Raf. de Port-Jérôme (S.I.)	1,144,000	126,000	259,000	105,000	1,634,000	7.51
.....	.....	152,600	.....	152,600		Sinco	et Frontignan (Hérault)						
288,000	7,000	.....	35,000	330,000		Belpétrole	Bond 10,000,000 francs						
152,000	14,000	.....	4,200	170,200		Union Naphte							
.....	.....	140,000	105,000	245,000		Petronaphte							
.....	.....	50,400	.....	50,400		Sté. des Oléonaphtes	Raffinerie de Pétroles du Nord						
96,000	.....	.....	35,000	131,000	1,337,600	Cts. et Pts. de Synthèse	Raf. de Dunkerque (Nord)	864,000	105,000	224,000	90,300	1,283,300	5.91
96,000	.....	.....	35,000	131,000		Huiles, Goudrons et Dériv.	Bond 8,300,000 francs						
192,000	7,000	.....	.....	199,000		Pétrole du Languedoc							
325,000	43,400	.....	42,000	411,000		Raf. de Pétroles du Nord							
						Raf. Pétroles de la Gironde							
256,000	.....	.....	.....	256,000	256,000	Raf. de Bec d'Ambes (Gironde)		1,080,000	105,000	.....	96,800	1,271,800	5.85
						Bond 4,000,000 francs							
580,860	21,000	9,800	.....	611,600		P. E. N.	Brest Port Pétrolier						
55,200	10,500	.....	.....	65,700	723,750	Petroleum Products	Raf. de Brest (Finistère)	800,000	70,000	.....	58,100	928,100	4.26
44,000	2,450	.....	.....	46,450		Rémoise des Pétroles	Bond 3,250,000 francs						
51,200	25,550	91,000	73,500	241,250		Pechelbronn	Pechelbronn						
131,200	.....	.....	.....	131,200	372,450	Als. des Carburants	Raf. Merkwiller (Bas-Rhin)	576,000	63,000	126,000	73,500	838,500	3.86
.....	.....	.....	.....	.....		Huiles Antar	et St-Marc (Finistère)						
							Bond 4,100,000 francs						
						(*) Les Consommat. de Pétrole							
288,000	119,000	210,000	17,500	634,500	634,500	Raf. de Donges (S.I)		.....	.....	140,000	17,500	157,500	0.73
						Bond 1,300,000 francs							
15,079,200	2,253,650	2,675,400	1,506,400	21,514,650	21,514,650			15,384,000	1,725,500	2,688,000	1,951,250	21,748,750	100.00

(*) This company participates in the group of the Compagnie Française de Raffinage with an estimated difference of say 441,000 barrels.

Footnote—Adapted from a compilation by ". a Revue Petrolifere" by courtesy of the publisher. Tons converted to barrels at a ratio of 1:7 for oils and 1:8 for gasoline.

Federal Oil Control Hinted by Borah

If the Government is to Control Production of Crude Oil, Says Senator Borah, Then It Must Protect the Public in the Price it Must Pay for Petroleum and Its Products.

OWING to differences of opinion existing today in the petroleum industry being aired constantly through the daily press of the entire world, considerable attention of an unfavorable nature has been attracted to the industry. In a recent issue of WORLD PETROLEUM it was pointed out that if such a condition prolonged itself the industry would inevitably drift into government control, particularly in the United States. The oil industry is exceptionally well favored with good trade journals where such matters can be properly discussed rather than before the general public through the channels of the daily press, which constantly uses opportunities to give important problems a sensational or distorted twist.

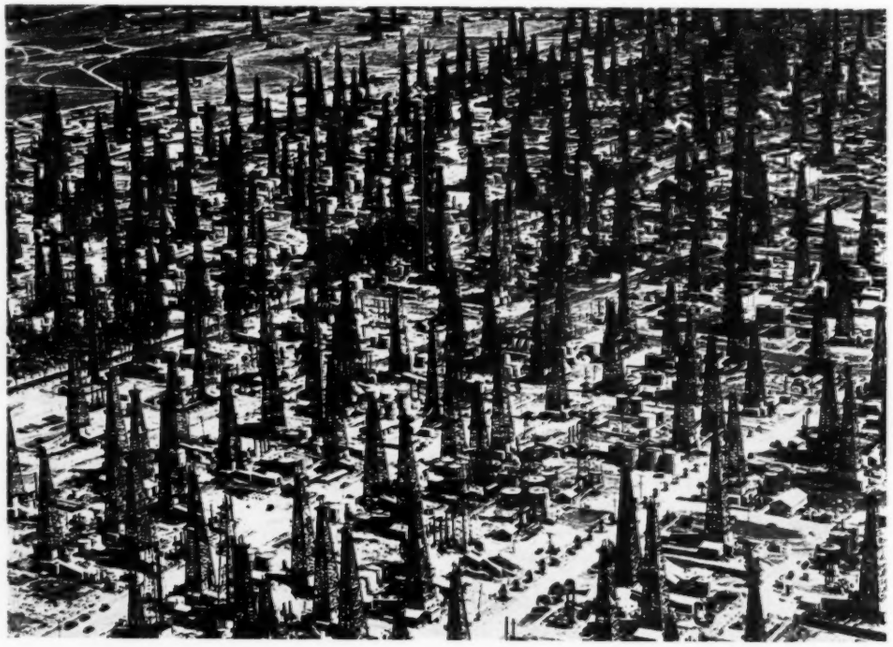
Since the publication of the last issue of WORLD PETROLEUM William E. Borah, chairman of the Senate's Foreign Relations Committee, who is one of the strongest figures in Government circles, has stated America's oil industry should be declared a public utility so as to give Congress control of prices if production is to be controlled. "The movement now under way in the direction of limiting oil importations and the States' restricting oil production makes necessary some regulation," declared Senator Borah, "to protect the public from exorbitant prices on oil and gasoline. If imports of oil are to be restricted upon the initiative, and under the protection of the Government, and if domestic production is to be restricted upon the initiative and by the authority of the States with the approval of the Government, then both the Government and the States will be constrained to protect the public in the price it must pay for oil and the products of oil."

In a letter to WORLD PETROLEUM on April 14, 1931, Senator Borah wrote as follows:

> "As the matter appears to me, if the Government and the States are going to be asked to take hold of the oil proposition, the program must be an all-inclusive one. I did not advocate in my statement that the Government should undertake to treat the supplying of oil to the public as a public utility unless the Government were induced to take hold and control the question of production.
>
> "I do not profess to know the solution of the oil problem, and would not assume to criticize those who are undertaking to solve it. But it is perfectly clear to me from a Government standpoint that the programs thus far proposed are wholly inadequate. If the Government is going to take hold of the oil industry, it must do so with the full understanding it can not stop with the question of production alone."

Senator Borah has made a clear presentation of his views, and while WORLD PETROLEUM does not necessarily agree with all of his conclusions, some steps are necessary to stabilize the oil industry for the benefit of all concerned, from the producer to the consumer. It is the opinion of some observers that there is too much interference with natural law during the present period of adjustment. But, if natural law is held in check at one point by artificial means, some methods must be taken to safeguard other interests such as those of the consumer.

In reply to Senator Borah, E. B. Reeser, president of the American Petroleum Institute, declared that the industry is acting for the benefit of the consumer as well as the industry itself, and that efforts made to restrict imports and pro rate domestic production are very definitely in the interest of the consumer. It is Senator Borah's further contention that oil is indispensable to national defense and to modern industrial life; that Congress certainly will not consent to the control of production without controlling the price the public must pay.



Utilization and elimination of wasteful competitive operations are considered by some observers to be essential steps in fields such as this Californian pool, if America is to maintain her vast world-wide petroleum trade in competition with well-controlled fields

Soviets Face Serious Marketing Problem

Markets Which Price Cutting Opened to Russian Oil No Longer Offer Ready Sales. Cultivation of New Sales Outlets Hampered by Changing Conditions and the Oil Syndicate's Sales Policies.

WHILE the world's oil leaders and government officials are straining every effort to curtail production to the point of consumption, Russia stands alone among nations in striving to the utmost to expand her output and to throw tremendous supplies of petroleum upon the overflowing international market. Actually her operations appear to be more spectacular than serious, but they nevertheless have created considerable concern, especially in the daily press.

Only two months ago Sergius M. Ganshin, the new chairman of the Soviet Oil Syndicate in Moscow, in a statement to the press declared that the first "Pyatiletka" (Five-Year Plan) of the Russian petroleum industry had been completed in two-and-a-half years, or well ahead of the schedule. Mr. Ganshin pointed out that in the main Soviet oilfields the actual production had already exceeded the quota originally set for 1933 by about 7,000 bbl. per day. He indicated that crude production during 1931 will reach 192,500,000 bbl., compared with 130,000,000 bbl. in 1930, and that 55,000,000 bbl. of oil and products will be exported. This quota—if attained—will mean an increase of 22,470,000 bbl. over last year's exports.

In Soviet Russia Mr. Ganshin's remarks created sufficient excitement to stimulate interest and action among oil workers, and domestic newspapers featured the achievements of the Oil Syndicate in display type. Executive officials of the Government, including Joseph Stalin, sent their congratulations to the heads of the oil industry and awarded 90 Azneft and Grosneft officials and workers with the Order of Lenin. This is the highest decoration now conferred by the Russian Government. Shock workers are to be granted prizes totalling 150,000 roubles and a trip abroad. In many other countries, including the United States, prominence has been given in the press to production and export plans outlined by Mr. Ganshin, and fears have been expressed that present disturbed world oil conditions will be rendered chaotic, particularly in China, South Africa and South America where the Soviets are using price cutting to secure new markets.

DURING recent months the vast petroleum program of the Soviets under their Five-year Plan has produced serious concern among oil interests seeking to curb the world oil flow. Fear of an engulfing flood pouring East, West and South has been expressed by several leaders. Some observers have begun to realize, however, that the real problem is not how this competition can be met, but rather for the Soviets to find sufficient sales outlets. Although Russia's exports increased from 14,865,000 bbl. in 1927 to 34,695,000 bbl. in 1930 her existing markets are now showing a tendency to slip away. New sales outlets to take care of greatly increased production cannot be easily found so the Soviet Oil Syndicate's future position is not enviable.

Last month WORLD PETROLEUM exclusively indicated obstacles which would prevent the Soviets securing the fifteen percent of the Chinese kerosene trade aimed at. Evidently the authorities in Moscow are beginning to have a better understanding of the importance of business factors controlling the market because no kerosene has yet been shipped to the Orient, although we understand that the proposition is open.

Similar and additional serious obstacles to trade expansion are arising as regards entry into other international markets, some of which are due to rapidly changing industrial conditions and some to reaction against the Soviet system of doing business. These throw a new light on the situation. Up to the present the one dominant thought in the minds of the Oil Syndicate and its trade representatives has been the fulfillment of the revised Five-Year Plan. This appears to have completely overruled all considerations of world industrial conditions. While it is one thing to plan, it is often another matter to make the plan fully effective. Within the U. S. S. R. control of plans and carrying out programs is far easier than are allied operations outside the country, where other factors have to be met, including strenuous resistance from oil companies entrenched by years of marketing effort, goodwill and recognized brands that have stood the test of time and service.

In view of the potential oil resources of Russia, and the rapidity of increase of production and refining recently attained, there is but little doubt that Russia can produce nearly 200,000,000 bbl. of crude this year as throughout the severe winter period the output averaged nearly 12,000,000 bbl. per month. Neither is there much doubt that 55,000,000 bbl. of crude and oil products can be diverted for export, even if internal requirements are not fully met. It will mean an increase of nearly 60 percent over last year; but the swift industrial expansion in Russia and the increasing tempo of operation that has resulted from the success of the plans to date, makes this possible.

Several important questions arise,

One of Russia's oil ports, Batoum

however, which are bound to have a strong influence on world marketing efforts of the Oil Syndicate during the balance of this year and in 1932. Is the Soyusneft fully conversant with the difference in present international business conditions from those which existed when its production and marketing plans were made? This point is raised as there appear to have been no modifications made which all important oil companies outside of Russia have found essential since business everywhere took a drop.

Secondly, is it fully appreciated that, given sufficient oil for shipments, not only must the potential markets be ready and willing to receive shipments but that adequate sales facilities for disposing of 55,000,000 bbl. cannot be developed overnight by rubbing a kerosene lamp? Paper plans, even if backed by commands from the highest officials in Russia do not necessarily serve the purpose of stimulating prospective buyers, even if they push the sellers. The products to be sold must at least meet the specifications to which consumers in various countries are accustomed, and the demand must exist. Finding new markets to absorb the proposed increase in exports actually is likely to prove a more difficult problem than will be the task of oil organizations—already entrenched in world markets—to meet the competition.

Consequently, if Russia continues to expand her petroleum production under existing circumstances for the direct purpose of enlarging exports, she may soon be faced with sufficient overproduction to upset smooth functioning and completion of her Five-Year Oil Plan. This may result in a serious position, because of her vast expenditures and credits in the United States and elsewhere for the equipment and engineering experience found essential to carry out the plan. Stocks will fill all available storage capacity, then production will have to be slowed down before the goal of 330,000,000 bbl. by 1933 is attained.

Today, the flow of crude from existing Russian wells is greater than refinery capacity by about 20 to 25 per cent. Owing to the fact that refining capacity is less than production there are practically no stocks of finished oil products in Russia. According to the Russian press, tankships arriving at Soviet ports for petroleum cargoes often have to wait five to eighteen days before they can load. Heavy demurrage bills result. It is possible that this particular condition may be alleviated somewhat, but the improvement—according to the same presumably well-informed sources—is not likely to be extensive. Meanwhile they add to the difficulties of export.

Russia's exports of 34,695,000 bbl. last year were shipped to the following countries:

Soviet Oil Exports by Country

Destination	Barrels
England	7,225,000
Italy	5,480,000
France	3,290,000
Germany	3,095,000
Spain	2,340,000
Egypt	1,730,000
India	1,345,000
Turkey	1,305,000
Holland & Belgium	1,170,000
Others	7,715,000
TOTAL	34,695,000

Although more than 70 per cent was shipped to European countries, only between 12 and 15 per cent was distributed by the Oil Syndicate's foreign sales organizations. The balance was sold to oil companies and interests that have national and international operations already established in the major markets. Russia's only distributing organizations are as follows:

Soviet Oil Marketing Organizations

Country	Company	Trade Name
Great Britain	Russian Oil Products Ltd.	R.O.P.

A great Russian oil field

(© Press-Cliche)

Over 40 tankers can be seen waiting for cargoes

Germany.....	Deutsche Russische Naphtha Gesellschaft	Derunapht, and
[redacted]	Derunapht., and D.E.R.O.P.	D.E.R.O.P.
Turkey.....	Naphtha Syndicate of Russia in Istanbull	.....

Russia is bent upon building up additional organizations of her own to market petroleum products in countries she considers it possible to enter successfully. But, the character of competition and drastic sales methods have produced strong opposition in many quarters. Where international or national oil companies are powerful, Soviet products are now purchased only on condition that the Oil Syndicate refrains as far as possible from direct and indirect competition. In other markets the going is said to be increasingly difficult for Russia due to lack of thorough knowledge of conditions and trade practices, together with the particular type of business ethics displayed by sales envoys who seem to be governed solely by the thought of attaining the Five-Year Plan. Representatives are fighting lone battles—none for them and possibly all against them. Every once in a while their own zeal gets them into hot water at Moscow, as witness the recent case of the two officials of the R.O.P. recalled from London.

When entering a new market the Soviets have to seek an independent merchant who as a rule buys oil to Soviet specifications at a reduction from world prices. When the products arrive and blending and compounding have to be done experiences show that his troubles begin. Moreover, the big oil concerns in recent years have made profits from transporting, marketing and by-products, rather than from producing oil. They also do their own banking business. On the other hand the small merchant has to make his profits from the oil alone. This is particularly the case when buying Russian petroleum. Often he finds marketing, transportation, and banking conditions against him and he discovers himself in an unfortunate predicament. This proved to be the case in connection with the cargo of gasoline recently shipped to Baltimore, Md., the specifications of which were far below standard domestic requirements.

Experience would indicate that while a new market is found from time to time for a tanker load, a second cargo rarely follows. Contracts are made with options for further deliveries, but the options rarely are exercised by the buyers. In the case of the Baltimore shipment disaster occurred to the interests that imported the gasoline, although the cost of the gasoline was well below the current domestic quotation when the cargo was ordered. Six months have elapsed since this importation, but not a single individual or company has been found in the United States willing to gamble on bringing in another cargo of Russian oil. In cases where independents have handled Soviet oils over a period of time, they appear for some reason or other ultimately to become insolvent.

This is evidenced by the following facts: The original owners of the Medway Oil & Storage Company, who had large contracts for Russian oil, were compelled to sell out to the major oil interests in Great Britain because of difficulty in operating under the terms of the contracts in combination with trade obstacles.

The Atlas Company of Johannesburg which is importing Russian supplies into South Africa apparently has only been able to import very limited supplies.

A.G.I.P. seems to be successful in marketing of Russian oil in Italy, because it is backed by the Italian Government. It is only difficult to ascertain who is bearing the probable losses of the proposition.

Of all independents the French group have proven to be one of Russia's best

Lenin district at Baku

(© Press-Cliche)

customers. This is, however, due to the fact that the group has been entrenched in the business just as long as, if not longer than, the international organizations. Therefore, it must be considered that Russia had something tangible to offer them in point of price so long as gasoline prices were high. This was the case before the formation of the Export Association, and during its existence. Since the dissolution of the Association prices dropped considerably. Roumanian gasoline is also being offered between 3 and 4c. per gallon and so any low prices by the Soviet Oil Syndicate will have relatively less value.

Not only will Russia face a big job in securing new sales outlets; but all indications are that she will have a formidable task in maintaining her present markets. Let us take the conditions in the countries where, last year, she disposed of the major part of 35,000,000 bbl.

GREAT BRITAIN. This market has been considered one of the most favorable outlets for Russian oil; but it begins to look somewhat gloomy as on April 1, the Oil Syndicate was given notice by the major oil companies purchasing from them that the contract will not be renewed. While it has not been renewed it is in force pro tem. The annual quantity involved is over 4,000,000 bbl. of oil. Of course, the R.O.P. has its retailing branches throughout the country; but it also has been selling oil to the Medway Oil & Storage Company and to the Anglo-American Oil Company. The contract with the latter also covers deliveries of Soviet oil to the Anglo-Persian and Royal Dutch-Shell Companies. Great Britain purchases about 275,000 bbl. of lubricating oil and 850,000 bbl. of fuel oil from Russia, the balance being motor spirit, kerosene and gas oil. It remains to be seen what steps the Soviet Oil Syndicate will take to replace the business lost through non-renewal of the contract with the British oil organizations. Price undercutting will only reduce its own revenue if adopted to increase sales through the R.O.P., and will further disorganize the market, and render motor spirit open to higher taxation. It is significant that the R.O.P. as distributor in Great Britain has not disposed of its entire quota.

FRANCE. In this country the situation seems to be somewhat more encouraging for the Soviets. According to official information emanating from Moscow the renewal contract signed with the French petroleum group last year shows an increase of 40 per cent, having been made for 2,400,000 bbl. of motor spirit as against 1,400,000 bbl. in 1930. While the official statement is accurate *De Jure* its *De Facto* interpretation is misleading because the old contract called for 1,400,000 bbl. of gasoline as the *minimum* quantity to be delivered, whereas the actual deliveries last year are equivalent to or higher than the amount called for in the new contract. There is, however, but little chance of any increase over last year's actual deliveries. The French oil group, which up to recently had been buying Russian gasoline almost exclusively, last January concluded a contract with Roumanian interests for the purchase of 1,600,000 bbl. of gasoline per year, which evidently is intended to replace Russian supplies. Another obstacle confronting the increase of Soviet petroleum sales in France is the action of the French government in finally agreeing to grant licenses to all oil companies now operating in France to construct refineries under guaranteed quotas for the next twenty years. The Soviets have had no direct selling organization in France, always having relied upon independent distributors, so will have no direct quota. The Société de Produits du Naphthe Russe maintains offices in Paris for handling bulk sales to the French oil group which consists of the following companies:

Société Petronaphthe; Société Raffinerie de Petrole du Nord; Desmarais Frérés; Société Lilles Bonniers et Colombes; Société Steaua Française; Société Industrielle des Petroles, etc.

It also sells to the Ministry of Marine for bunkering the navy.

The contract with the French group provides for purchase of crude oil from Russia, so the Soviets may get a good share of the supply imported. But, in

Locations of today's petroleum operations in Russia. As stated on page 56, January World Petroleum, the proposed Grozny-Moscow crude pipe line will not be built.

Oil derrick in the new Dagestan field under development

(© Press-Cliche)

two to three years from now the pipe line from Iraq to Tripoli and Haifa should be in operation, and as France gets 23¾ per cent of the oil produced by the Iraq Petroleum Company it probably will automatically reduce the quantity of crude imported from other sources including Russia.

Details of the new French import licenses are published elsewhere in this issue of WORLD PETROLEUM—Editor].

SPAIN. Quite an important contract was held with the Spanish Oil Monopoly; but the renewal was not made and the petroleum business was diverted recently to Roumania.

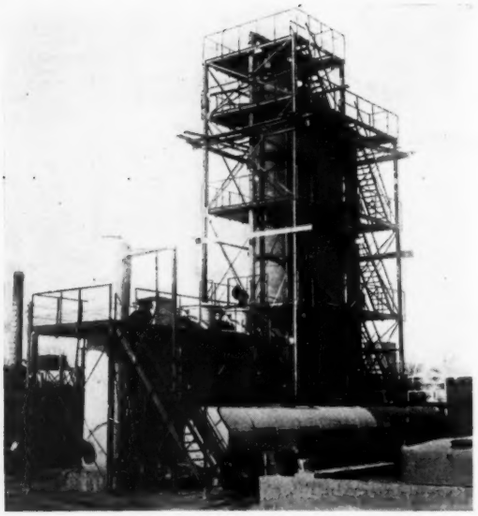
ITALY. An increase of its present share of the Italian oil market may be expected by the Soviets; but at the present time the business in Italy is not very profitable as it consists mainly of fuel oil. Last year about 85 per cent of the oil imports into Italy from Russia consisted of this product. Italy's consumption of gasoline only amounts to about 3,250,000 bbl. per annum and its distribution is strongly entrenched in the hands of international oil groups which undoubtedly will put up a strenuous fight against any aggressive intrusion. Furthermore, under the Mussollini policy the tendency is toward a national refining industry which will ultimately reduce the amount of refined products imported. It will increase the quantity of crude oil brought in, unless the recent oil find in Northern Italy soon develops to commercial proportions. Italy will not share in the Iraq crude, but possibly will make purchases from the Iraq Petroleum Company two to three years from now.

GERMANY. Under a new agreement reached between the oil combine in Germany, i.e.,—the Benzol Verband—and the Soviet Oil Syndicate, the latter is allowed a quota of 1,720,000 bbl. of gasoline per year against 1,560,000 bbl. previously. This, however, while in conformity with the growing consumption is only a small increase compared with the 3,200,000 bbl. quota expected by Russia. As regards crude oil, indications are that Germany will greatly increase her production within a few years, and in 1930 it jumped to 1,209,285 bbl. Meanwhile there is a duty of $4.00 per bbl. on all imported crude. New refineries are being erected in the country, which naturally will effect imports of gasoline. Apart from these limitations Roumania is so strong in the German petroleum market, and is cutting prices, that it is not easy to ascertain how Russia can increase her trade with Germany.

EGYPT. Last year Egypt imported 1,730,000 bbl. of petroleum products from Russia. Since the first of the year Egyptian custom figures and Lloyd's Charter Register have not shown any shipments of gasoline or kerosene from Russia to Egypt. Apparently the Soviets have lost their share of the petroleum business with the exception of fuel oil deliveries made as transit bunkers to Port Said. While no reason for this loss has yet been announced there is a possibility that it is related to the raising of customs duties by the Egyptian government in February, 1930. It was decreed that double rates shall be imposed on all commodities from

Four Jenkins cracking units at Baku

(© Press-Cliche)



(© Press-Cliche)

Foster Wheeler benzine unit named in honor of Stalin

countries which do not maintain a reciprocal trade agreement with Egypt. Enforcement of this measure has been postponed from month to month but the law can be enforced at short notice.

In Belgium and Holland the sales are made from the office of the Société des Produits du Naphthe Russe in Paris, the contract being with the Société Purfina Belge in the former country. Oil trade in the Baltic States is handled by a Soviet oil organization at Riga known as the Larunaft. In the United States the Amtorg Trading Corporation of New York is the Oil Syndicate's representative, selling to the Standard Oil Company of New York for the Indian and Levant markets, and to the Vacuum Oil Company for Egypt and Syria. Such exports as have been made to South America have been arranged by the Yousamtorg of Buenos Aires.

One of the marketing disadvantages confronting the Soviets in exporting to countries outside of Europe is the matter of freight rates. For instance, bulk oil cargo rates from the Black Sea to the River Plate under today's low figures are 35 cents per barrel higher than the rates from the Dutch West Indies. The international oil companies on the other hand can draw their supplies from refineries located at the nearest point to a market. The Soviets have only one base to draw from until a refinery is completed at Sakhalin in the Far East.

The best headway made by Russia up to the present time has been the sale of fuel oil and with marketing three grades of lubricating oil, namely, machine, cylinder and spindle. It is rather significant that the ratio of Soviet exports of dark products in 1930 amounted to 62 per cent of total exports, compared with 57 per cent in 1929. Sales of gasoline, ligroin and kerosene in 1930 amounted to 38 per cent of the total as against 43.5 per cent in 1929. The decrease in the ratio of sales of white products has been partly caused by Russian gasoline and kerosene—although of high quality—being inferior to American grades. Before Russian gasoline can be sold to the consumer it has to be blended and compounded. Being sold by the Soviets in its original state it is used as a basic material for further blending, and consequently is handicapped in competition with a finished American product. Russian gasolines are straight run grades as up to now very little cracking has been done in Russia, although about 30 cracking units may be completed this year. Baku gasoline is of relatively good anti-knock quality; but both Grozni light and heavy are of poor anti-knock rating and must be blended with benzol or American light gasoline or casing head gasoline before entering the consumer market. It is not surprising, therefore, that the R. O. P. in London as well as the D. E. R. O. P. and Derunapht in Berlin has been compelled to buy considerable quantities of benzol and Californian light gasoline for blending purposes. Not long ago the Soviets conducted negotiations with American interests for casing head gasoline to be shipped to Russia for blending; but the plan was abandoned, due to insufficient funds.

Where markets are located at a geographical advantage to Russia she has every chance of doing considerable business, particularly where the consumer is not particular in his demand as regards specifications. But it is hardly to be expected that the strongly entrenched international oil companies who have built up marketing facilities over a period of years will allow themselves to be forced out of the market without a struggle. To gain or maintain a strong foothold the Soviets probably will have to rely largely on selling direct to the international companies already operating, or else sell through numerous small companies. In the latter case market disorganization is likely to occur, which means a breakdown of the price structure, showing losses for all concerned. Prices have already dropped more than 40 per cent since last year and are no longer profitable to anyone so even if Russia manages to maintain throughout 1931 the equivalent

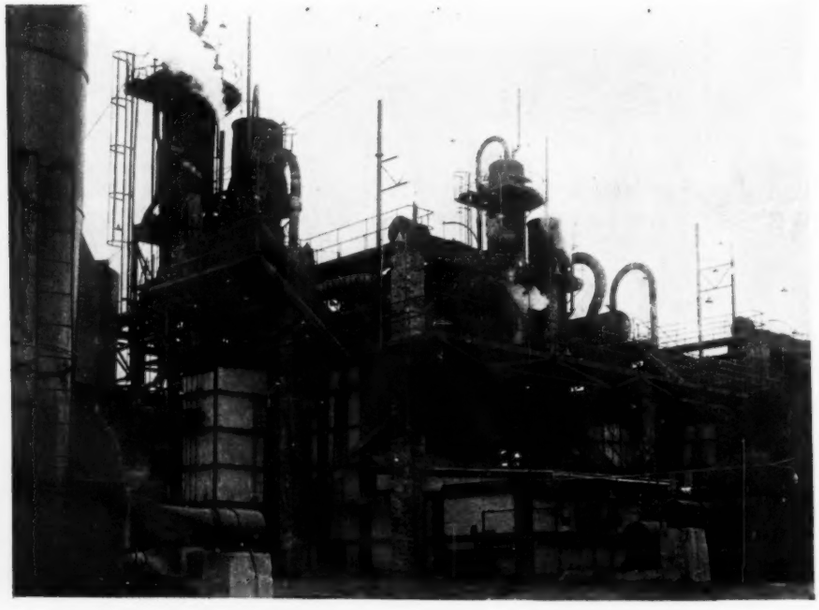
Specifications of Russian Petroleum Products

	Grozni Gasoline (Light)	Grozni Gasoline (Heavy)	Baku Gasoline	Ligroin	Kerosene
Spec. Gravity at 60° F. API.	63.6	60.0	56.0	51.1	40.0
I. B. P.	110° F.	125° F.	110° F.	220° F.	.....
Distill. at 212° F.	40%	20%	30%	.....	.....
Distill. at 320° F.	95 &	80%	95%	.....	.....
Distill. at 392° F.	.....	96%	.....	95%	.....
Distill. at 518° F.	.....	.....	.....	.....	80%
End Boil. Point	347° F.	420° F.	347° F.	428° F.	.....
Flash	.....	.....	.....	.....	90° F.
Residue & Losses	3%	2.5%	1.5%	1.5%	.....

NOTE) Russia can, and does, improve on the above specifications, as in the case of the shipment to Baltimore, which was Grozni heavy gasoline. The I.B.P. was 110° F., which is below the U. S. Motor standard of 95-98° F.

Four Jenkins cracking units at Batum

(© Press-Cliche)



and volume of her exports last year, the revenue from this source will be greatly depreciated. To maintain last year's sales in dollars Russia will have to export approximately 60,000,000 bbl. in 1931. This seems almost impossible.

On the other hand Russia is determined to expand her oil industry and to increase her exports. Her efforts cannot be lightly regarded even if her task is a very difficult one. Her internal consumption could be tremendously increased; but the income from exportations is of vast importance in completing the Five-Year Plan and in meeting obligations, hence domestic uses meanwhile will be restricted as much as possible. European countries,

Specifications of Gasolines on American Market, Published for Comparison with Russian Gasoline

(Average of 298 samples from 20 cities tested by the U. S. Government in 1930)

	Competitive Price	Premium Price
Specific gravity	0.746	0.746
Degrees A.P.I.	58.2	58.2
Vapor Pressure	7.2	7.0
Distillation data in Deg. F.)		
First drop	98	99
10% evaporated	149	146
20% "	184	176
50% "	265	250
90% "	372	352
End Point	406	392
Average boiling point	261	248
Per cent recovery	97.3	97.4

Russian Domestic Petroleum Consumption

	Fiscal Year 1928/29 (Barrels)	Fiscal Year 1929/30 (Barrels)	% of increase
Gasoline	1,015,000	1,620,000	+30
Kerosene	10,500,000	14,000,000	+37
Lub. & spec'l oils	2,100,000	3,575,000	+72
Black lube oil	1,540,000	1,820,000	+18
Fuel oil	38,720,000	49,350,000	+30
TOTALS	53,875,000	70,365,000	*+37.4

* Average.

Russian Refined Petroleum Exports

	Fiscal Yr. 1929/30 (Barrels)	Fiscal Yr. 1928/29 (Barrels)	Fiscal Yr. 1927/28 (Barrels)
(Original figures were in Metric Tons. Conversion Rate—1 ton to 7½ bbl.)			
England	6,600,000	5,437,500	2,925,000
France	3,900,000	3,000,000	2,662,500
Spain	2,662,500	2,325,000	1,537,500
Italy	5,512,500	3,900,000	3,712,500
Germany	3,112,500	3,627,500	2,587,500
Belgium-Holland	1,275,000	750,000	712,500
Turkey	1,312,500	1,125,000	*
Egypt	1,740,000	1,387,500	1,237,500
India	1,342,500	1,305,000	1,162,500
Central Europe	*	930,000	750,000
Scandinavia	510,000	472,500	337,500
Greece	375,000	150,000	*
South Africa	135,000	172,500	*
South America	60,000	60,000	*
Baltic States	285,000	262,500	210,000
Algiers	90,000	240,000	*
All others	3,982,500	1,372,500	*
Bunkers	1,050,000	637,500	262,500
TOTALS	33,945,000	27,155,000	18,097,500

*Figures not available. Other figures are approximate.

Indiana Standard Enters British Petrol Market

SINCE it acquired control of the Pan-American Petroleum and Transport Company, and the latter's numerous producing, refining, transportation and marketing subsidiaries in other countries, the Standard Oil Company of Indiana has become an important international petroleum organization. In view of its great oil holdings in Lake Maracaibo, Venezuela, and Mexico, and its remarkably efficient refinery on the island of Aruba, D. W. I., and its share in the Iraq Petroleum Company whose pipeline is soon to be built, it is not surprising that an outlet is sought in Great Britain. The latter country, outside of the United States, is the world's largest consumer of motor spirit. The Indiana Standard is in a particularly favorable position to cater to the British market from either the United States, Aruba or Mexico. Although no indication has been given by the company, we should not be surprised to see the erection of a refinery in Great Britain, or at some point in the Mediterranean, by the time that Iraq oil is flowing to deep water.

In its entry into the British petrol market the Indiana Standard is allied with Charles Tennant and Company, which, together with the Pan-American Company, owns the Elbano Oil Company, a Scottish concern hitherto engaged in refining and marketing asphalt. This company has signed a contract with the Petroleum Storage and Finance company to handle about 30,000,000 Imperial gallons of petrol during 1931, or about three percent of the British consumption. Working capital is provided by Elbano having subscribed for about 200,000 of the Petroleum Storage's £1 ordinary shares, and for 700,000 deferred 1s shares, for a total of £437,500.

A section of the British daily press appears to think that a petrol trade and price war is foreshadowed by the activities of the Indiana Standard, but such fears would appear to be quite unfounded. Further reduction in the price of petrol in Great Britain seems likely; but if it comes it will be due to basic conditions, rather than to the activity of any one company.

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including the Near East, form logical markets for the Soviet Oil Syndicate, as their geographical situation places the Russians in a strategic position. Furthermore, Soviet oil specifications virtually meet the requirements of these markets.

There is no question but that the Soviets will continue to form a strong competitive force in Europe and the Near East where the total consumption, excluding the U.S.S.R., amounts to around 220,000,000 bbl. of petroleum, and their export quota for 1931 is about 25 per cent of this quantity. Hence, as their position to compete is getting stronger due to increasing output, and as the incentive is becoming more pressing, the Soviets may concentrate their greatest efforts within this nearby market, which also forms a valuable sales outlet to American and British oil interests. A harmonious European sales understanding unquestionably would enable Russia to secure better prices on a smaller volume of exports through eliminating causes tending toward shattering of price structures. This would bring Soviet operations in closer accord with international oil marketing policies.

[Close students of Russia's marketing activities have noticed that all of the Soviet's spectacular invasions of foreign markets have been in countries where geographical conditions have been against her. Only where long hauls have to be made, and where her operations are not established has she carried out price cutting during the last few years. In European markets her sales efforts appear to be running smoothly alongside those of American, British, Dutch and other companies without any signs of price slashing. Today, Roumania is selling petroleum products in Europe below the prices of the Russians and of the big oil organizations, and has offered deliveries to the U. S. A., and actually is a more serious competitor than the Soviet Oil Syndicate.—EDITOR.]

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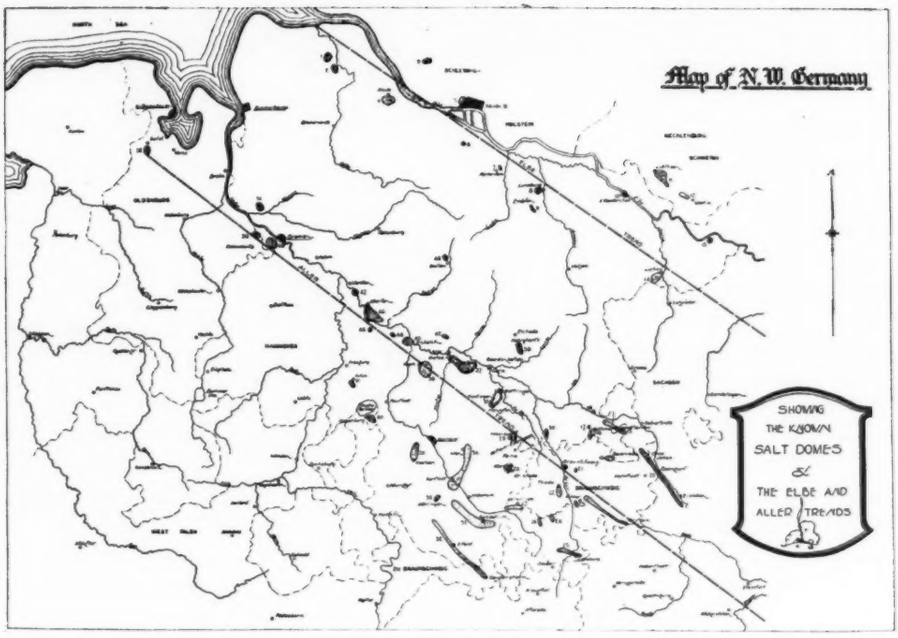
Petroleum Imports

IMPORTS of gasoline into the United States during 1930 amounted to 16,927,000 bbl., valued at $59,000,000. Imports of topped petroleum, including fuel oil were 26,080,000 bbl., valued at $18,875,000, according to the U. S. Chamber of Commerce.

A discussion of Germany's salt domes was published in March World Petroleum

Map, courtesy of Ira Rinehart.



Germany's Oil Industry in Perspective

Complete Review of Crude Production and Exploitation Expansion to Date with Visualization of Operation of All Active Petroleum Companies. Proposed New Refineries . By Joseph Mendel

WITHIN the last few months there has been a flood of statements, both official and unofficial, regarding the drilling activities and oil production in Germany, especially the North German oil fields. As is always the case with oil booms, a speculative movement is under way, exciting large sections of the Hanoverian population. In recent years there also has been a marked increase in participation of German, Dutch, English, and American capital in this movement. It may be of interest therefore, to make a critical examination of the situation and results, with special reference to the most recent operations.

It goes without saying that even a moderate increase in German oil production would make a considerable difference in the condition of Germany's oil supply, 90, if not 95, per cent of which must now be imported. Up to the present time there has appeared no prospect of the occurrence of such a shift in conditions. According to official figures now available for 1930, prodution in the Hanover field amounted to 1,187,144 bbl. [The German Government furnished WORLD PETROLEUM with 1,209,185 bbl. as the official total, using the ratio of 1 ton = 7 bbl.—*Editor*] against 725,956 bbl. in 1929, and 644,021 bbl. in 1928. To this production has been added the oil output of Thuringia, a region in which considerable activity has developed recently, among others, by Gewerkschaft-Volkenroda, which belongs to Burbach-Kali-Konzern. This production at present amounts to about 14,000 bbl. per month. New drilling undertaken in other parts of Germany, in which foreign capital now is especially interested, has not shown any considerable results as yet. At all events, the total actual production of crude in central and northern Germany including the small amounts produced in southern Germany (foothills of the Bavarian Alps, Tegernsee) is not likely to amount to 1,400,000 bbl. during 1931. The oil strike in Alsace (Pechelbroun) is now in possession of the French, and in 1930 produced 516,642 bbl. against 501,634 bbl. in 1929.

Even with a yearly production of 1,400,000 bbl., nearly twice that of 1929, there is not much prospect of reducing German oil imports, or of covering any considerable proportion of Germany's oil requirement by domestic production. German imports of mineral oil and other fossil raw materials in 1930 amounted to 23,800,000 bbl. (19,530,000 bbl. in 1929), valued at 417,700,000 (previous year, 366,200,000) marks. Included in these imports are 11,440,000 bbl. (previous year 8,480,000 bbl.) of benzine valued at 247,000,000 marks (previous year 175,000,000 marks) 1,453,102 bbl. of illuminating oil worth 24,900,000 marks (previous year 16,300,000); 3,234,000 bbl. (previous year 2,552,900 bbl.) of gas and Diesel oil; and 2,574,600 bbl. of mineral lubricating oils worth 61,500,000 marks (previous year 99,500,000 marks). From these figures it will be seen that the economic crisis and the increased production of artificial gasoline from coal and lignite by the hydrogenation process have not prevented an increase in importation of oil products to meet increased demand resulting from the use of automobiles, motorboats and airships, although one sign of industrial depression is indicated by a decrease in imports of lubricating oil. From domestic oil, and from imported oil, crude benzine, and other pe-

Germany's first commercially productive well; drilled in 1859

troleums, German refineries in 1929 produced 2,344,000 bbl. of benzine, 250,600 bbl. of Diesel oil; 343,000 bbl. of gas, paraffin and other oils; 2,151,100 bbl. of lubricating oil, and 12,700 tons of paraffin. Although the figures for 1930 are not yet available the 500,000 to 550,000 bbl. increase in crude production should result in a corresponding increase of domestic refined products. But, it is evident that even this increase will not change the fact that at least 90 or 92 per cent of Germany's mineral oil requirements, whether in finished or unfinished form, must, in the end, come from foreign countries.

There now remains the principal question; to what extent is the near or remote future likely to bring changes in these relations? In considering this question we must make a distinction between those regions where oil has actually been found and those where there are possibilities of discovering it. In the Hannoverian region the producing fields now include the Wieze-Steinfoerde district, which is the oldest, the Oldheim-Peine district, which also was opened decades ago, and the Haenigsen-Obershagen-Nienhagen district, which in the last few years has shown marked productivity. These three districts on the whole lie somewhat close together between Celle-Hanover and Lehrte; the Wietze-Steinfoerde district lies west of Celle and south of the Alle; the Haensigen-Obershagen district lies south-southeast of Celle, and the Oelheim-Peine district west of Hannover-Lehrte. To this latter district there has been added lately the Oberg field. Other oil locations are said to exist southeast of Hannover, south of Lehrte, and east of Braunschweig.

During the past year the production of the Wietze-Steinfoerde field reached 427,539 bbl. against 337,582 bbl. and 322,742 bbl. in the two preceding years. This field, which was formerly the leading one, was surpassed in 1930 by the Nienhagen-Haenigsen-Obershagen field; in that year this field produced 586,404 bbl., which is almost 50 per cent of the North German oil production. The field was brought in in 1920/21 with a production of only a few thousand bbl.; in 1923 it reached 105,456 bbl. and in 1927 jumped to 316,050 bbl. In 1927/1928 its production fell off a little but still remained close to the Wietze production and has now left the latter behind it. These relations are detailed in the accompanying table.

In 1930 the Hoensigsen district alone produced nearly 50 per cent of this output, Oelheim-Peine 14 per cent, Wietze-Steinfoerde 36 per cent.

Besides these actually proucing oil fields of the Hannoverian region, to which must now be added the Thuringian field, where recent drilling operations have become very active, there are the so-called "promising" districts. These stretch over the whole of the north German plain, and besides the province of Hannover, include Brandenberg, parts of Pommerania, Schleswig-Holstein, Oldenburg, and the region of Hamburg and Bremen. In all these regions small fields of gas and oil have been noted for a long time, but they have produced more disappointments than oil. Among these finds are those at Heide in the Holstein district, certain localities east and south of Berlin, at Altmark near Gardelegen, Rudersdorf, etc. Recently a productive find has been announced from Oldenburg.

Besides direct oil production by drilling, within recent years successful experiments have been carried out in the production of petroleum by mining operations and the recovery of oil by distillation of certain formations (chalk, bitumen and asphalt).

Stimulated and assisted by foreign interests the German petroleum industry has in the last few years entered upon a new stage, which has been characterized by the change from shallow wells reaching less than 1,000 feet below the surface in favor of deep wells. At the present time depths of more than 2,800 feet have been passed, and the recent increase in production is a direct reflection of deeper drilling.

Among the transactions that have taken place in the last weeks and months we may mention one between the Preussag, or Preussischen Bergwerks A. G., a concern which for years has exploited Government potash, coal, and mineral deposits, and the deep-well drilling concern, Anton Raky. The former has acquired for 8,000,000 marks a large, improved property with oil rights in the neighborhood of Edesse-Berghopen. This

Peasants have dipped oil for years at Dollberg seepage

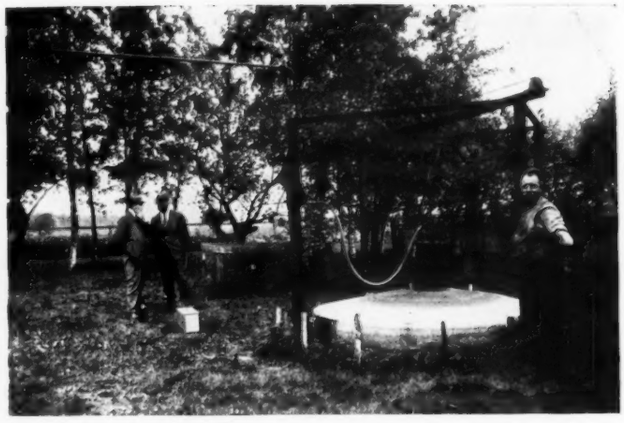
Production in Hanover's Leading Oil Fields

YEAR	Wietze-Steinfoerde (Barrels)	Nienhagen-Haenigsen-Obershagen (Barrels)	Oelheim-Peine-Oberg (Barrels)	TOTAL (Barrels)
1926	309,526	334,432	23,429	667,387
1927	328,062	316,050	34,069	678,181
1928	322,742	274,323	46,998	644,063
1929	337,582	310,891	78,113	726,586
1930	427,539	586,404	173,201	1,187,144

deal involves about 1,000 acres on which there is flowing oil that had to be shut off on account of lack of refinery and storage facilities. In addition to two producing wells of 2,970 feet and 3,025 feet depth there are two others of 1,320 feet and 1,650 feet, which are also producers and which the Raky concern has still to complete under contract with the Preussag through its subsidiary, the Gewerkschaft Florentine. It may be remarked that the Raky Gesellschaft and the Gewerkschaft Florentine have a 50 per cent participation in the Graefl. Scharffgottsche Verwaltung, with which the Preussag has come to an understanding. The Preussag itself, which has obtained much success with modern equipment and especially with rotary outfits, has secured drilling contracts from the North European Oil group. It may also be remarked that the Erdoelkonsortium-Nienhagen-Edesse belongs to the Raky concern, and through this ownership Raky has participation in a number of operating and drilling companies.

The North European Oil Corporation, registered at Wilmington, Del., U. S. A., was organized in 1929. By means of contracts executed in Germany this concern has assured itself of extensive field rights, especially in Oldenburg, Mecklenburg-Schwerin, Braunschweig, and Hannover (Wietze-Nienhagen, Beedenbostel, Hope, and particularly in the neighborhood of Salztoecken). These rights it has transferred to subsidiaries. It has formed the Oldenburgische Erdoel G. m.b. H., and the latter's subsidiaries the Oldenburgische Oelausbeutungs G. m.b. H. and the Allgemeine Erdoel G. m.b. H. Oldenburg, all the shares of which it owns. Other subsidiaries are the Mecklenburgische Erdoel G. m.b. H., the Gewerkschaft Regina (Braunschweig), the Gewerkschaft Matthias zu Siegen (Westphalia), the Harburger Bergbau G. m.b. H., Oestoel G. m.b. H., the Westoel G. m.b. H., and finally the Nordeuropaesch Oelgesellschaft G. m.b. H. This latter will be in future, the holding company for the German N.E.O.C. interests, because it is necessary for foreign capital to be invested in corporations subject to German law.

This new holding company possesses a capital of 100,000 marks and has between 25,000 and 50,000 marks invested in each of the other subsidiaries. Capitalization can easily be expanded when required by successful operations and increased drilling activity. The North European Oil Corporation in conjunction with the Raky Bohrgesellschaft also owns shares in the Bertha Bohrgesellschaft of Sottorf, Sachsenwald, and holds 100 per cent of the shares of the Gewerkschaft Margot. In addition to its above mentioned land rights in the German fields the North European Oil Corporation has recently acquired extensive holdings of the shares of the Norddeutsche Mineraloel A.G.



Gas well at Molkeri, Ovelgonne district, State of Oldenburg

It was announced recently that the entire capital of the Nordoel, amounting to 2,200,000 marks, had been sold to the Magdalena Syndicate Corporation of New York. The Nordoel stockholders will receive 50 per cent in shares and 50 per cent in the debentures of the American corporation.

The Norddeutsche Mineraloel A.G., the so-called Greiser concern, is exploiting several fields, and in conjunction with Raky has lately become interested in the refinery formerly belonging to Dr. Lepenau & Co. located at Salsbergen near Osnabrueck. In Oberg, near Peine, Nordoel owns some finished and producing wells and has a number of other drillings in which strikes were made several years ago. The oil obtained from these drillings, together with purchased crudes, is worked up in the Salzburger refinery. In recent years the production of this refinery has amounted to between 35,000 bbl. and 42,000 bbl. per year of benzine, illuminating oil, gas oil, lubricating oil, etc. Aside from the Salzburg refinery, Nordoel is also enlarging its refinery at Dollbergen near Oelheim-Berghoepen. Here also it is refining purchased crudes along with its own production. The North European Oil Corporation is arranging to supply the Nordoel-Gesellschaft, which at present has a capitalization of 2,200,000 marks, with 6,000,000 marks, new working capital.

Another foreign oil company is the Anglo-Foreign Oil and General Trust Co., Ltd., of London, which belongs to the so-called Mercurio concern (Anglo Ecuadorian Oil Co.), and has founded

Nienhagen field, with 2250 bbl. well in the foreground

the Erdoelbohr und Verwertungs G. m.b. H. of Lehrte, and is considering the establishment of a new refinery at Lehrte. Among the other larger concerns which date back several years in the Hannoverian oil industry special mention may be made of the Deutsche Petroleum A.G., which is controlled by the Deutschen Erdoel A.G. and the Rutgers-Werken, 19,000,000 marks of its 35,000,000 capital being held by the former and 13,000,000 by the latter. Among the important assets controlled by the Deutsche Petroleum A.G. are Hannoverian oil enterprises of the Deutschen Erdoel A.G., acquired since the latter turned its attention to production of petroleum by mining. DEAG has also transferred to DPAG all its Weitze petroleum enterprises. Actual production of the Wietze-Steinfoerde district coincides nearly, if not quite, with the production of the Deutsche Petroleum A.G. (formerly Deutschen Erdoel A.G.). There exist in the Wietze district a few small oil enterprises, for example, the Erdoelwerke Nienhagen-Wietze, the Gewerksschaft Henri (Siegen), Doria (Dollbergen) and a few others which own drillings. Up to the present they have obtained only small yields.

A second large German petroleum concern is represented by the Gewerkschaft Elwerath of Hannover. This concern has a number of subsidiaries, among others the Gewerkschafts Froehlich, Schmal, Erdoelwerke Neuenwietzen G. m.b. H., Erdoelwerke Dachtmissen, Bohrgesellschaft Nienhagen-Werflingen-Dachtmissen, and others. Elwerath Gewerkschaft, which belongs to Wintershall-Kali-Konzern, has a 30 per cent participation in Gewerkschafts Proserpina and Sidonie, the rest of these concerns being owned by the Itag-Rautenkranz concern.

Elwerath has been especially fortunate in th Haenigsen-Nienhagen field, where, since 1928, it has obtained more than 259,000 bbl. of oil from 40 wells, and at the present time it is improving on this result through favorable developments in this district. Concerns affiliated with the Elwerath include the Gewerkschaft Thekla, which has made a strike at Nienhagen.

Another concern is represented by the Itag-Rautenkranz-Groetzinger interests, which has lately come into the ownership of the Ebag or Erdoelbergbau A.G. of Celle. As stated above, Itag-Rautenkranz owns shares in the Gewerkschafts Proserpina and Sidonie, and from a number of drillings in the Haenigsen Nienhagen district made several strikes yielding in all a few thousand barrels. This concern also owns the Gewerkschafts Krug von Nidda and Aurora, part of whose stock is in the possession of Deutschen Petroleum A.G.

The previously mentioned Ebag, which has a capital of 200,000 marks, produced about 35,000 bbl. of oil in 1929. Its special field is the Oberg district, where it has put down more than 80 wells. It owns 21,600,000 square meters of oil rights in Aberg, Gross Ilsede, Klein Ilsede, Gadenstaedt and Lafferde. Ebag is exclusively a producing concern and delivers its crude oil to the Deutsche Gasolin Gesellschaft, which is a subsidiary of the Shell-Standard-I.G. Farben. It will thus be seen that when all the threads are traced to their ends, the great international oil and chemical companies are found to have penetrated into Hannover. The Ebag has also turned its attention to deep drilling, for this purpose making use of its connection with the Internationale Tiefbohr A.G.

The Anton Raky Tiefbohr A.G. of Salzgitter (the Harz) has drilling and sharing contracts with numerous companies. It has recently been active in Haenigsen-Nienhagen and also in the Oberg district, where it has closed the above mentioned deal with the Preussag after the latter had received American offers. Raky also has close connections with Astra Erdoel A.G. and Hertha Bohrgesellschaft, from which it has connections leading to the NEOC. Finally, mention may be made of the oil properties of the Burbach-Kali-Konzern, which owns 75 per cent of the shares of the Gewerkschafts Riedel and Niedersachsen and 100 per cent of the shares of the Gewerkschaft Volkenroda of Thuringia which recently made oil strikes in this potash region.

Aside from these successful enterprises there have been numerous partial and complete failures. A number of drilling enterprises that have failed to strike oil have suffered capital losses and have gone into bankruptcy. The fate of many small concerns, whose shares have been sold by swarms of agents to the uninformed country folk, shows that for success it is essential to have a large working capital in order to weather the first unproductive period.

The entry of the Prussian Government into the German oil industry through its interests in Preussag shows that it is really the success of the foreign *entrepreneurs* which has given Germany, in these critical times, the courage to enter the field with its own capital. The Preussag example is also an indication that a movement is under way to bring the entire question of oil rights in Hannover under Government control; but this movement is encountering strong opposition based on the old Hannoverian laws, according to which every land owner on whose land oil is found has an exclusive right to produce his oil; the State is unable to confiscate his production except by equitable compensation or at least a participation in the profits. The question of oil legislation in the province of Hannover has attained greater prominence since foreign oil companies began looking into oil rights. In order to obviate complications the foreign companies are required to set up German subsidiaries.

Foreign capital has only looked into the German oil fields since the war, the first step having been taken by the Sinclair group through the Stinnes concern. It is obvious that foreign capital must be accorded security if it is to be permanently interested in Germany, which is especially desirable because Germany, suffering from a great scarcity of capital, is unable with its own resources to put down the necessary deep wells.

Participation of foreigners can only be obtained by assuring them definite rights. On the other hand foreign capital invested in Germany must exploit the German oil deposits in good faith, and then place the product obtained at Germany's disposal. Participation of foreigners would entail a serious disadvantage for Germany if the German oil fields were acquired only for the purpose of tying them up and thus leave Germany, as before, to supply itself with American or other foreign oil. Germany has the right to have its oil fields, which unfortunately have for decades been split up into small parcels, opened up on a genuine business and technical basis. In this sense the Germans will gladly welcome and assist American, Dutch, and English capital if the latter will throw itself with good will into the work of opening up these fields, and no obstacles will be thrown in the way to prevent foreign capital from obtaining a good profit. It will be necessary, however, to prepare an unobjectionable legislative and regulatory base. This will be necessary, in any case, even from the German standpoint, in order to allow sufficient elbow room to such large units of German capital as the Government enterprise, the Preussag. When such a basis for friendly cooperation of foreign and domestic capital has been laid it is possible that even in the immediate future German oil fields will be opened widely.

Gasoline Position in Canada

ALTHOUGH the Dominion of Canada annually consumes 4,700,000 bbl. (U. S.) more than it refines, and consequently imports this quantity, the marketing situation is far more satisfactory than in the United States. Last September a customs duty of 2.5 cents per Imperial gallon was re-imposed, but the oil companies have since made an equivalent reduction in the price. This action, it is expected, will encourage importing of crude and refining in Canada.

In 1913 the wholesale price of gasoline was 22.45 cents per Imperial gallon. The following Imperial Oil table gives the fluctuations since that year.

	Aver. Wholesale Price of Gasoline in all Canada (Imp. gal.) Cents	Percentage of Pre-war Price of Gasoline (Imp. gal.) Percentage
1914	21.71	85.3
1915	21.28	83.6
1916	31.79	124.9
1917	34.22	134.4
1918	35.73	140.4
1919	35.92	141.1
1920	43.52	171.0
1921	39.93	156.9
1922	36.84	144.7
1923	29.47	115.8
1924	27.79	109.2
1925	26.83	105.4
1926	27.94	109.8
1927	24.62	96.7
1928	23.35	91.7
1929	23.57	92.6
1930	22.54	88.6
1931 (Jan.)	21.62	85.0
1931 (Feb.)	21.27	83.6
1931 (Mar.)	19.30	75.7

The total annual consumption of gasoline in the Dominion in 1929 was 14,450,825 bbl. (U. S.), and the maximum crude production in any one year, 1,500,000 bbl.

While Canada is singularly immune from crude or refinery overproduction, successive price cuts to the consumer have been caused lately by the condition of over-production prevailing in the United States. As an offset to this the Canadian government has announced that it will introduce anti-dumping legislation to protect domestic refiners against distressed selling by American refineries. Valuation on imported gasoline has been fixed, for duty purposes, at 4.655 to 7.905 cents per gallon. These fixed prices allow a spread, as compared with prices prevailing at U. S. points, that definitely protects Canadian refineries against dumping.

How the spread between crude oil prices gasoline retail prices has continuously decreased in Canada during the past five years may be indicated by a comparison of motorspirit prices at any point in Canada with U. S. mid-continent prices of crude.

Canadian Gasoline and Mid-Continent Crude Prices

Year	Average Toronto Service Station Price of Gasoline (ex Tax)	Average Price per Imperial Gallon 36° Mid-Continent Crude Oil	Spread between Crude Price and Gasoline Price
1926	28.75c.	5.71c.	23.04c.
1927	24.67	4.51	20.16
1928	23.40	3.77	19.63
1929	23.40	3.83	19.57
1930	22.50	3.48	19.02
As of March 17, 1931	19.50	1.68	17.82

▼

World Motor Spirit Prices

MOTOR spirit prices in different countries of the world during the fourth quarter of 1930 are given in the following table. The figures have been prepared by the Petroleum Division of the U. S. Department of Commerce. In using these figures as a basis for comparison, the variations in cost of transportation, taxes, distribution and marketing costs, quantity consumed, and other factors that affect price in the different countries should be taken into consideration.

Country	U. S. Cents
Algeria	bulk 27–35
Australia	bulk 48–49
Australia	tins 57–59
Austria	24
Azores	tins 62
Barbados	40
Belgium	bulk 23
Bolivia	tins 57
Brazil	46
British Guiana	50
British Honduras	tins 29–33
British Malaya (Imperial gal.)	bulk 42
Bulgaria	bulk 30
Canada (Imperial gal.)	30
Ceylon	48
Chile	bulk 39–45
Chile	tins 44–48
China	tins 31
Costa Rica	bulk 48
Costa Rica	tins 49
Cuba	26
Cyprus (Imperial gal.)	tins 38
Czechoslovakia	25
Denmark	bulk 27
Dominican Republic	36
Ecuador	tins 27–40
Egypt (Imperial gal.)	bulk 34
Egypt (Imperial gal.)	tins 39
Estonia	25–34
Ethiopia	tins 63–65
Finland	28–29
France	31
French Indo China	tins 38
Germany	29
Gold Coast (Imperial gal.)	tins 62
Greece (Imperial gal.)	46
Haiti	bulk 30
Hungary	15
India (Imperial gal.)	tins 40
Iraq (Imperial gal.)	bulk 34
Iraq (Imperial gal.)	tins 43
Irish Free State (Imperial gal.)	bulk 29
Irish Free State (Imperial gal.)	tins 31
Jamaica (Imperial gal.)	44
Italy	38
Japan	tins 21–27
Japan	bulk 20
Kenya (Imperial gal.)	69
Latvia	38
Libia	44
Lithuania	28
Madagascar	tins 52
Mexico	bulk 25
Morocco (French)	31
Morocco (Spanish)	bulk 27
Mozambique	tins 48
Netherlands	22–24
Netherland East Indies	35
Nicuragua	tins 42
Norway	23
Panama	32
Paraguay	tins 33
Persia (Imperial gal.)	tins 25
Peru	bulk 29
Peru	tins 31
Philippine Islands	34
Poland	bulk 36
Porto Rica	bulk 25
Portugal	41
Senegal	tins 39
Society Islands	tins 31–32
Spain	24
Sweden	22
Switzerland	28–29
Tunisia	24
Turkey	tins 39
Union of South Africa	bulk 43
United Kingdom	28
Uruguay	34
Yugoslavia	bulk 43

An Imperial gallon is equal to approximately 1.2 United States gallons. Aviation gasoline retailed in Brazil at 50 cents per gallon; in Chile, at 54 cents in tins; in China for 34 cents, and in Ecuador from 45 to 54 cents.

Gasoline prices in Chile include a tax of 12 cents per gallon; in Colombia a tax of 7.7 cents per gallon; Iraq, tax of 9 cents (excise) and 2 cents (city).

Jersey Standard States Tariff Position

Great American Oil Company Breaks Silence With Analysis of Pros and Cons of Tariff Situation. Recommends Percentage Ratio Between South American Imports and Home Production.

OUT of the protracted period of low prices for crude petroleum and its products in this country has come a determined effort by a large section of the producing fraternity to obtain prosperity by Federal legislation. The proposals have taken two forms. One would impose an embargo against imports, admitting only a small percentage of the quantity of crude and gasoline brought in during recent years. The other would accomplish a complete embargo by indirection through the imposition of import duties so high as to make foreign oil cost about twice as much at New York (at present prices) as the domestic oil of better quality.

The proposals were argued, for the most part by the proponents, in the closing weeks of the last session of Congress, in committee. A special train brought 300 producers to Washington from the oil producing states to show the strength of sentiment in favor of the desired legislation. Similar efforts will, it is announced, be made in the next Congress. The United States is a high tariff country with an administration elected on a protection platform. Whether or not the petroleum business should be walled in is a matter of expediency.

The Standard Oil Company (N. J.) took no part in the discussion before the Committee. No one who appeared there was authorized to speak for it. The company's officials have given no indication as to whether they would favor or be opposed to the measures asked by the producers. In public discussions and in arguments within the industry their attitude has been one of impartiality, although the company, as one of the principal importers, naturally has an interest in a fair settlement of the question.

What follows here is not an argument pro or con. It is an attempt to clear the issues by setting forth briefly the case for and against a prohibitive tariff. No matter how large the amount of capital invested in domestic and foreign oil fields, or what effect the legislation would have on earnings on this capital and on the people employing it, the real interest to be considered is that of the petroleum industry and the American public. Would they be benefitted or injured, and why?

THROUGHOUT the strenuous campaign for an oil embargo or tariff recently carried on in Washington by independent oil men, the Standard Oil Company of New Jersey refrained from taking any part. Neither did the organization give any indication as to whether it would favor or oppose measures urged by Mid-continent, Californian and other producers. Now that the last United States Congress turned down the proposals, the Jersey Standard, through the medium of its house organ, *The Lamp*, has made public a clear statement of its position, and offers its recommendation for satisfactory adjustment. The Company's balanced interests at home and abroad affords it a neutral position on the matter.

The friends of a tariff or embargo—the two things are so nearly the same in objective that no attempt will be made to differentiate between them—have advanced the following points in support of their stand:

1. Proration efforts, entered into voluntarily by a considerable part of the industry and involving a real sacrifice by many for the good of the nation and the industry, are offset so long as there is no limitation on imports. What is the use of curtailing domestic production 300,000 barrels per day under the total of even one year ago if the total U. S. supply is not proportionately reduced?

2. Since the United States produces, and has for a long time, two-thirds of the world's oil, the domestic markets or home consumption should be reserved for the U. S. producer. With more than ample supplies it is not fair to American producers to admit the competition of foreign oil.

3. The cost of foreign produced oil with transportation charges added is enough below the cost of the domestic article as to place the American producer at a disadvantage.

4. Materials and supplies purchased by U. S. producers are nearly all protected by tariffs; similar protection should be given to the crude and products they sell.

5. On several occasions in the course of the hearings the proponents of tariff argued that their recommendation could bring about a higher price for domestic crude without entailing a corresponding advance in gasoline.

Specifically it was put upon the record that when crude oil was selling in the mid-continent at $2.04 a barrel, in 1926, the average price of gasoline in 52 cities in the United States was 18.09 cents a gallon exclusive of state taxes; that in 1930, when the crude oil was $1.29 a barrel, the price of gasoline in these same cities averaged 18.39 cents a gallon; and that in 1931, when crude was down to 87 cents a barrel, the gasoline price remained about 18 cents.

On the other side, those opposing a tariff in the hearings at Washington have offered arguments which may be summarized as follows:

1. With one important exception, the

company's importing crude are American, so that while the oil is produced abroad, it is an American owned product. Moreover, it is produced partly to be refined in the United States; as an adjunct to business domiciled in this country.

2. For a great many years part of the U. S. consumption has been supplied by foreign oil, and actually today imports make up a smaller percentage of the U. S. total supply than in former years.

3. The quality of imported oil is inferior to the average grade of domestic crude. It is largely used for the production of fuel oil and asphalts, being low in gasoline content. Imports originally were from Mexico. With the decline there the American companies transferred activities to Colombia and Venezuela. Imports have come mostly from the latter in recent years. The oil has approximated the Mexican product in quality. Therefore, it goes largely to supply fuel and asphalt markets.

4. The consumption of fuel oil on the eastern seaboard is 112,500,000 barrels per annum, of which imports supply approximately 57 per cent. Users of this fuel oil say that to make them dependent upon the domestic article would add seriously to their costs.

5. The owners of 26,000,000 motor vehicles in the U. S. believe that limiting competition to domestic producers would result in higher gasoline prices.

There is given below the posted price of 36° gravity Oklahoma and Kansas crude on the dates mentioned by the advocates of a tariff, together with the retail prices of gasoline, ex-tax, on the same dates. The retail prices are those of fifty leading cities of the United States, one from each of the forty-eight states in the Union except Illinois where two cities were used, and the District of Columbia. This gives as fair an average over the entire country as can be obtained.

Crude Prices	Retail Gasoline Prices
Feb. 1, 1926—$2.04	Feb. 1, 1926—19.06 cents a gal.
Feb. 1, 1929— 1.20	Feb. 1, 1929—17.37 cents a gal.
Feb. 1, 1930— 1.45	Feb. 1, 1930—17.18 cents a gal.
Feb. 1, 1931— .95	Feb. 1, 1931—14.67 cents a gal.

The reduction in the four years was $1.09 per barrel in the representative grade of crude oil and 4.39 cents per gallon in the service station price of gasoline.

6. Shutting out South American oil would jeopardize existing friendly relations and treaty obligations.

7. Crude brought to the U. S. to be refined employs our labor and contributes to our taxes to an appreciable extent

8. In the last eight years, exports of oil have greatly exceeded imports, so that the United States is a gainer on the exchange. A table of imports and exports for the past ten years is included herewith.

9. Later figures are not available, but in the three years 1927-28-29 the value of imports was $389,834,268, and of exports $1,572,946,825, an excess balance in this country's favor of $1,183,112,557, or at a rate of about $400,000,000 per annum.

10. If lower cost foreign oil and products are shut out from the United States they will move directly into foreign markets now supplied from the United States. Since exports now greatly exceed imports, if this country loses its sales abroad it will mean an actual curtailment in the consumption of American crude, besides the loss in wages in those engaged in refining for export.

Economics of the Oil Situation

The area of an oil producing field is not nearly so closely circumscribed as formerly. The Rockies were a natural barrier between west coast and mid-continent production until the opening of the Panama Canal. Foreign fields are today an important factor in markets thousands of miles removed. You cannot have protection by isolation so long as there is an over-abundance of oil anywhere in the world.

Overproduction which is back of the movement to bar imports, is by no means local to the United States; it is worldwide. Every oil producing country now has more oil than can be sold in its natural geographical market. The world's total consumption in 1930 averaged 4,150,000 barrels of oil per day. To supply this there was potential production at the end of the year of 6,223,000 barrels per day—an excess of 2,073,000 barrels per day over the quantity required. In the United States we had an average daily consumption of 2,985,000 barrels, and a potential supply in the form of domestic production of 3,883,000 barrels per day—an excess of 848,000 barrels per day. We are carrying in storage above ground 659,000,000 barrels crude and products. The amount of shut-in production within the United States today is so much greater than our total imports as to constitute the real threat against stabilization.

The principal production from South America, that from Colombia and Venezuela, is geographically situated as near foreign markets are Atlantic and Gulf loading ports now supplying them. Under the realignment which would follow an embargo, or duty, United States exports would be reduced to the extent that foreign oil moves directly into the export markets instead of passing through the United States to be worked into products.

The industry's problem the world over is to produce its crude only as rapidly as the economic demand for it warrants, which means producing it according to the tenets of conservation, at the lowest average cost, for a market willing to take it at a fair price.

Reference was made to the interest which Standard Oil Company (N. J.)

U. S. Total Supply

Year	U. S. Crude Production	% of Total Supply	Casing-Head	% of Total Supply	Imports	% of Total Supply	Total Supply
1920	449,151,000	79.20	9,160,000	1.62	108,794,000	19.18	567,105,000
1921	472,897,000	77.15	11,278,000	1.84	128.783,000	21.01	612,958,000
1922	556,512,000	78.11	20,000,000	2.81	135,947,000	19.08	712,459,000
1923	746,516,000	85.69	25,000,000	2.87	99,657,000	11.44	871,173,000
1924	719,346,000	85.37	28,000,000	3.32	95,325,000	11.31	842,671,000
1925	760,059,000	87.36	31,141,000	3.58	78,851,000	9.06	870,051,000
1926	766,668,000	87.10	32,304,000	3.67	81,293,000	9.23	880,265,000
1927	906,416,000	89.12	38,752,000	3.81	71,852,000	7.07	1,017,020,000
1928	888,676,000	86.91	42,326,000	4.14	91,552,000	8.95	1,022,554,000
1929	1,001,702,000	86.16	52,265,000	4.49	108,698,000	9.35	1,162,665,000
1930	905,889,000	85.20	51,723,000	4.87	105,619,000	9.93	1,063,231,000

U. S. Imports of Crude and Products (42-gallon barrels)

Year	Crude	Gasoline	Miscellaneous	Total
1921	125,247,000	900,000	2,636,000	128,783,000
1922	130,256,000	1,479,000	4,212,000	135,947,000
1923	82,015,000	4,555,000	13,087,000	99,657,000
1924	77,836,000	3,293,000	14,196,000	95,325,000
1925	62,005,000	3,813,000	13,033,000	78,851,000
1926	60,337,000	6,051,000	14,905,000	81,293,000
1927	58,270,000	5,003,000	8,579,000	71,852,000
1928	79,767,000	4,198,000	7,591,000	91,556,000
1929	78,914,000	8,834,000	20,950,000	108,698,000
1930	62,130,000	16,927,000	26,562,000	105,619,000

U. S. Exports of Crude and Products (42-gallon barrels)

Year	Crude	Gasoline	Miscellaneous	Total
1921	9,552,000	13,134,000	48,037,000	70,723,000
1922	10.637.000	14,157,000	48,079,000	72,873,000
1923	17,076,000	20,741,000	62,619,000	100,436,000
1924	17,509,000	29,008,000	69,352,000	115,869,000
1925	13,141,000	31,582,000	68,677,000	113,400,000
1926	15,406,000	43,852,000	72,568,000	131,826,000
1927	15,843,000	44,442,000	80,991,000	141,276,000
1928	18,966,000	52,904,000	82,777,000	154,647,000
1929	26,402,000	62,059,000	74,829,000	163,290,000
1930	23,706,000	65,621,000	67,369,000	156,696,000

Year	IMPORTS Crude	Products	EXPORTS Crude	Products	Excess of Exports
1921	35,829,722	2,341,116	7,662,428	16,678,000	56.8% *
1922	31,395,545	4,379,329	7,239,400	23,053,200	18.1%
1923	13,340,448	2,604,955	8,976,100	28,147,200	133.0%
1924	23,194,004	650,916	12,467,000	35,543,200	101.0%
1925	20,399,099	287,862	10,119,600	38,162,700	133.0%
1926	18,774,462	2,374,717	11,882,100	41,311,600	151.0%
1927	18,839,281	72,258	10,238,200	42,145,500	177.0%
1928	20,230,971	728,794	12,168,657	47,586,300	185.0%
1929	24,230,975	422,813	17,953,400	44,322,900	153.0%
1930	21,448,480	577,187	12,905,500	40,070,100	140.0%

* Excess of imports

has in foreign production and foreign markets. More than one-third of its capital is invested in its foreign operations.

The above table shows the number of barrels of crude oil and products imported into the United States by this company's affiliated and subsidiary interests and the exports for the same group during the past ten years. In this decade the company's foreign producing activities have in no way contributed to the accumulation of a domestic surplus. On the contrary, the equivalent of all petroleum imported has been sold out of the country plus 226,510,000 barrels supplied from domestic production.

For the ten years, total imports were 242,123,000 barrels, total exports, 468,633,000 barrels, and the average excess of exports over imports 93.6 per cent.

These facts make it clear that Standard Oil Company (N. J.) is a factor in the world oil situation and that its interests are not localized in any particular country. The company benefits when the entire oil industry of the world is in a prosperous condition, and suffers correspondingly by a disturbance of economic conditions in any branch of the business.

Another purpose in citing the foregoing figures is to show that the company's business is so divided that if Congress should vote to keep out foreign oil it would be a matter of but a few months for Standard Oil Company (N. J.) to put itself in position to refine abroad the crude oil that is now imported. Products could be as easily moved from such new refining bases into established export markets as they are today from the United States.

The Standard Oil Company (N. J.) has refrained from building another refining unit on the northern coast of South America. The additional capacity is not required, the industry being already overbuilt, and the company wishing to keep its American personnel employed as far as possible.

The company has gone on record on more than one occasion as being willing to reduce its imports in proportion to any reduction made in domestic production. As an American corporation, it would thus make its foreign operations integral with United States production.

If a tariff results in a higher price level for domestic crude, the Jersey company will benefit with other domestic producers. Because of its balanced interests at home and abroad the company is in a neutral position in the matter of free or heavily taxed oil imports. Under an embargo the company would refine its foreign crude where it produced, instead of in the United States as at present. Products would move to foreign markets, replacing an equivalent quantity of the company's exports from the United States.

A Suggested Solution

As the present situation is unsatisfactory, the Standard Oil Company (N. J.) ventures to suggest a remedy.

The proposal is that the equities between the United States and South American producers be adjusted by establishing a percentage ratio between the two areas. This was attempted by the Holmes Committee in the early part of 1929 when it was urged that production both in northern South American countries (including Mexico in the group exporting oil), and the United States be held through 1929-1930 down to the 1928 level. This plan met with approval on the part of the American petroleum industry. To make such an agreement effective Congress might empower the President to invoke a tariff on oil imports in the event that the agreed upon percentage is not maintained.

Since United States production is two-thirds that of the world, whatever percentage curtailment is made here could properly be applied as a yardstick in all other producing areas to keep world production balanced with consumption. Foreign producers generally would find it much to their interest to adopt such a policy.

Conclusion

The petroleum industry was practically a unit in support of conservation until the agitation for shutting out foreign oil arose. Since then there has been a divergence of views which has worked against the success of proration. It would be greatly to the advantage of the whole industry if this difference in viewpoints could be reconciled and the industry lined up in support of an economically sound conservation policy covering both domestic and foreign production.

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Shell Opposes Low Grade Gasolines

"ANY factor which tends to increase production of petroleum products is sure to be detrimental,"—says F. Godber, one of the managing directors of the Royal Dutch-Shell group. "For this reason, the Shell Companies feel it unwise to attempt to meet 'bootleg' prices of gas by marketing a low quality product. In recent years the Shell Companies have improved the grade and the anti-knock qualities of their gasoline, and have generally advocated giving consumers a better quality rather than the reverse. Smaller quantities of gasoline of this superior quality are obtained from a given quantity of crude, than if inferior gasoline is manufactured. And, the manufacture of this high grade product has tended to reduce the total quantity of gasoline produced.

"The production and sale of low quality gasoline to compete with that offered by 'bootleggers' will result in increased output and consequently a further bad effect upon the market. One would like to see improved qualities all around, particularly as this becomes ever more necessary by the trend of automobile development toward higher compression.

"Further, it should be remembered that the general distribution of a low quality product will entail very heavy additional capital investments in the way of pumps, tanks and other facilities, thus adding to the already enormous unproductive investment in such facilities. The oil industry can ill afford such an expenditure at this time."

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Petroleum in Gulf S.W.

A STATISTICAL summary of the growth and present status of the petroleum industry in the Gulf Southwest section has recently been compiled and published by the United States Department of Commerce under the title of "Petroleum Industry in the Gulf Southwest." This booklet is number 44 of the Domestic Commerce series.

Compulsory Adulteration of Motor Fuel

The Growing Tendency of Government to Force Gasoline Distributors to Adulterate Their Product with Alcohol and Similar Substitutes Constitutes a Dangerous Menace to the Already Harassed Petroleum Industry.

By William Russell

HISTORIANS of this turbulent era are certain to remark that growing interference with all forms of activity was one of its outstanding features. The forefathers may have fought for liberty but the governments to whose custody it has been committed concede a diminishing amount to their subjects.

One of the most pernicious examples of an effort to exert the power of government in behalf of small groups without regard to the welfare of the people as a whole, is to be found in the growing practice to compel the adulteration of motor fuel with inferior substitutes, generally alcohol.

The business of manufacturing alcohol has been in a languishing condition in many coutries for some time and in looking about for a crutch to support its tottering course the petroleum business has been selected.

The argument usually advanced is that national interest demands that each country should utilize its own fuel resources to the fullest possible degree in order to prevent its possible interruption in time of war, and to prevent the outgo of the money spent on petroleum imports. Countries without native petroleum resources or with an inadequate supply naturally form the most fertile ground for this propaganda.

It is highly questionable whether any genuine national purpose is ultimately served by this dubious practice. An inferior fuel is forced on the motoring public without saving and often at an increased cost, sometimes hidden. The benefits of improved motoring design are withheld and in many cases the cost of motor repairs materially increased. The fact that adulteration is possible on a limited scale only, is evidence that the adulterant could not be relied on to any extent in emergency.

Where a genuine apprehension exists as to the fate of a nation without petroleum in time of war it would seem more sensible to take advantage of the present flood of cheap oil to accumulate a proper reserve in storage against such emergencies.

As to the argument that money spent abroad for oil is a drain, this fits in quite well with the present policy of many great nations determinated to build up a large export business and cut off all imports, even of raw materials like petroleum. A unique picture will be presented when we arrive at that millenium when all nations have a good export business and no import counter-drain.

Petroleum is, and is likely to remain, the best source of fuel for motor vehicles, and the arguments recapitulated above are advanced in most cases simply to force the petroleum industry to carry some sick local business on its back, often with many special advantages to officialdom.

The growth of this practice is one which the petroleum industry should watch vigilantly and combat vigorously, carrying its appeal to the general public wherever necessary.

Some idea of the extent and activity of this movement may be gained from the following survey made by Dr. Georg Kaltenbrunner of Vienna, former high official of the Austrian Ministry of Finance and the present manager of the Association of Alcohol and Yeast Producers, which is of course interested in increasing the use of alochol:

Germany

Germany also has a state alcohol monopoly, which exclusively conducts the sale of alcohol of every kind. By far the greater part (about 53,000,000 gallons) of the alcohol produced is made from potatoes and cereals. About 7,900,000 gallons are produced from molasses and about 6,600,000 gallons from sulphite pulp by-products. This production is capable of a material increase.

Alcohol for the production of motor fuel has been sold by the government monopoly since 1923-24. The mixture, consisting of alcohol, gasoline and benzoline, was called "Monopoline" and a special organization was set up for its sale, in which organization the monopoly held 53 per cent and the other alcohol interests 47 per cent. The leading mineral oil firms of Germany, which supply 80 per cent of the inland demand, have lately acquired the 47 per cent of the share capital owned by the alcohol interests and 4 per cent of the shares owned by the monopoly, so that at present the oil interests have the majority control of the organization . Since 1925-26, however, the monopoly alcohol has been gradually superseded by a mixture of technical alcohol and gasoline (the present proportion is 25 per cent alcohol and 75 per cent gasoline). Alcohol produced from sulphite pulb by-produtcs is principally used for this purpose.

Until April, 1930, no regulation existed for the compulsory admixture of alcohol in motor fuel. The alcohol-gasoline mixtures consequently had to compete with gasoline, and alcohol was sold at prices far below its production cost. The last reail price fixed by the monopoly before the introduction of the law making the admixtnre of alcohol compulsory was 28 cents per gallon; the loss was made by charging higher prices for other kinds of alcohol, especially drinks. The quantities of alcohol sold were 2,600,000 gallons in 1925-26, 4,420,000 gallons in 1926-27, 4,720,000 gallons in 1927-28, 7,300,000 gallons in 1928-29, and 6,200,000 gallons in 1929-30.

With a view to promoting agricultural alcohol production, a law was drafted in April, 1930, which became effective on August 1 following, under which the government was empowered to require that alcohol be used as an admixture in motor fuel, and that importers and producers of such fuel purchase a certain quantity of alcohol from the monopoly. The law provides for the compulsory purchase of alcohol at a fixed percentage to a given quantity of motor fuel and fixed this percentage at 2.5 per cent for 1930-31, 3.5 per cent for 1931-32, and 4 per cent for 1932-33. At present the retail price of this motor alcohol is fixed at 72 cents per gallon.

On the basis of the motor fuel consumption figuers up to the present year, a motor alcohol turnover of 13,000,000 to 16,000,000 gallons is anticipated for the year 1930-31. Inasmuch as the retail price of alcohol is much higher than that of gasoline, this may bring about an increase in the price of all German motor fuels, although the importers of mineral oil have not yet raised the price of motor fuel.

France

In France the production of the so-called "National Fuel" (*Carburant National*) has been regulated by law since 1921. Every person importing motor fuel from abroad has to purchase alcohol to the extent of 10 per cent of the quantity of fuel imported and mix it with this fuel. The state reserves for itself a trade monopoly of all alcohol used for technical purposes. It stocks the entire quantity produced for these purposes, and consequently also markets the alcohol that is intended for motor fuel. Only technical alcohol (99.5 per cent) is used for mixing.

Up to the end of December, 1930, the retail price of motor alcohol was 26.8 cents per gallon, which was below the average cost of production. For the year 1930-31 a price of 35.2 cents per gallon has been fixed. Technical alcohol is produced in France from sugar beets and molasses. There is no production from sulphite pulp by-products. The consumption of motor fuel

in France is large and the supply available is not nearly sufficient to cover the requirement for the admixture of alcohol to the extent of 10 per cent of the motor fuel imported. As a consequence of this situation, it is understood that the quantity of alcohol actually used as an admixture is only one percent, and only state-controlled and municipal bodies use gasoline mixed with alcohol. The quantity of state-controlled alcohol sold for motor fuel purposes in France amounted to 7,860,000 gallons in 1925-26, to 4,600,000 gallons in 1926-27, to 5,350,000 gallons in 1927-28, to 5,830,000 gallons in 1928-29, and to approximately 10,550,000 gallons in 1929-30.

Sweden

In Sweden the alcohol used for motor fuel is produced exclusively from sulphite pulp waste liquor. There is no government control. The quantities of alcohol returned as having been sold for motor fuel are as follows for the last three years for which data are available: 1926, 580,000 gallons; 1927, 870,000 gallons; 1928, 660,000 gallons. The retail price of motor alcohol is between 23 and 25 cents per gallon.

Czechoslovakia

In Czechoslovakia motor alcohol mixed with gasoline and benzoline has been used for a number of years. More recently an alcohol-gasoline mixture called "Dynalcol" has been introduced. The use of alcohol as motor fuel has not yet been made compulsory, but the intention of the government to bring in a bill to this effect has recently been announced. Alcohol is produced in Czechoslovakia in the agricultural distilleries from potatoes and cereals and in the industrial distilleries from molasses. The entire amount produced is marketed by a state-controlled organization, which fixes the price and also supervises the production and sale of "Dynalcol". The price of motor alcohol at present is about 20 cents per gallon, which is far below the average cost of production. The loss is made up by the increased retail prices of alcoholic beverages. The quantity of alcohol sold for "Dynalcol" production amounted in 1927-28 to 1,680,000 gallons, in 1928-29 to 1,390,000 gallons, and in 1929-30 to 1,240,000 gallons. The "Dynalcol" industry enjoys safe-guarding to the extent that the government agencies (post-office, railways, army, and others) supply their requirements almost exclusively with this product of which they consume about 40 per cent of the total production.

Hungary

Hungary, which has a state control organization of agricultural and industrial alcohol (Landesspiritusverwertungs A. G.) put a law into effect on November 1, 1929, providing for the compulsory mixing of alcohol and gasoline and requiring importers and producers of gasoline to purchase a certain quantity of alcohol. At present 20 per cent of alcohol is required to be mixed with so-called "medium gasoline", and gasoline of this kind is not permitted to be sold in an unmixed state. The price of motor alcohol is fixed by the government at 23.6 cents per gallon, which is below the production cost. The turnover of motor alcohol from November 1, 1929, to September 1, 1930, amounted to about 2,640,000 gallons. Alcohol production both from agricultural products and from molasses, is capable of being increased in Hungary.

Poland

Poland also has a state monopoly for the sale of alcohol. There is no law requiring the admixture of alcohol with gasoline, but the enactment of such legislation has repeatedly been advocated by interested parties. The consumption of motor alcohol is said to have amounted last year to approximately 800,000 gallons. The retail price, fixed by the monopoly, is 20.5 cents per gallon. This is much below the average production cost, but the loss thus incurred is made up on the prices charged for other kinds of alcohol. Alcohol in Poland is made principally from potatoes, with only a small production from molasses, as a great deal of the molasses produced in Poland is exported. The production of alcohol could be considerably increased.

Italy

The use of alcohol in admixture with gasoline was made compulsory in Italy by a royal decree in 1926, the proportions established being 70 and 30 per cent. Importers of motor fuel are required to purchase a prescribed quantity of alcohol, but owing to the fact that Italy as yet does not produce alcohol in sufficient quantity, the date on which this law was to have taken effect has been postponed. In February, 1930, measures were adopted by the government with the object of building up a national alcohol industry and producers and importers of alcohol were ordered to hold a quantity of 25 per cent at the disposal of importers of motor fuel. The putting into effect of the law for compulsory mixing of fuel appears, however, to have been again put off, since it has been reported that the embargo on the 25 per cent of existing alcohol stocks has been withdrawn.

Austria

The entire alcohol production is under state control in Austria, but so far no legislation has been enacted for the compulsory use of alcohol in motor fuel. The intention of introducing such a law has, however, repeatedly been announced by the government.

From the foregoing summary it becomes apparent that the prospects for an extensive employment of alcohol for motor fuel are not the most favorable under conditions of free competition with other fuel. A considerable number of European countries, however, have laws regulating the use of alcohol in such fuel, and were laws to be adopted in all countries making the use of mixed fuel compulsory a very large market for motor alcohol would be created. The only kind of alcohol which, generally speaking, can stand free competition is that produced from by-products of sulphite pulp.

The consumption of alcohol as motor fuel in the countries in which it is extensively used for this purpose (France, Germany, Czechoslovakia, Sweden and Poland) amounts to about 19,500,000 gallons and probably will reach 26,000,000 gallons in the near future. Through the general enactment of compulsory laws this quantity of course could be much further increased. Under state control, too, motor alcohol could be sold at moderate prices, by offsetting the loss from selling below the cost of production by higher prices for alcohol of other kinds, especially that consumed in beverage form.

In addition to the preceding countries covered in Dr. Kaltenbrunnens reports the following notes from other quarters show the widespread character of this movement:

Latvia

The American Trade Commissioner at Riga reports:

The Latvian Cabinet recently approved the proposed law providing that all fuel for internal combustion engines must contain 25 per cent alcohol, and submitted the law to the Latvian Parliament with a recommendation for immediate passage. By this measure the Government hopes to reduce imports of gasoline and to assist agriculture. Gasoline imports into Latvia have increased from 28,700 barrels in 1926 to 70,860 in 1929, and amounted to 78,880 barrels in the first nine months of 1930. The annual consumption is now estimated at 100,000 barrels, and if 25 per cent of this quantity is replaced by locally manufactured potato alcohol the Government estimates that the saving on foreign purchases will be about $290,000. At the same time a market will be formed for potatoes produced within the country.

Naturally this scheme is encountering strong opposition. Several of the largest local automotive transport organizations and automobile clubs have joined in protesting against passage of the bill. It is claimed that the tests were not accurate, and that potato alcohol has not proved satisfactory as motor fuel when tried abroad. It is also argued that the increase in cost of motor fuel will seriously affect the local automotive market.

Brazil

The urgent necessity of assisting the Brazilian sugar industry in overcoming the superproduction crisis has prompted the federal government to draw up a decree enforcing the use of alcohol in motor fuel throughout the country, according to a dispatch to FACTS ABOUT SUGAR, dated February 15th. The project, now before the legislative council, provides that importers of gasoline, before paying the import duties, must show that they have bought "national alcohol" suitable for motor fuel to the amount of at least 5 per cent of the quantity of gasoline imported. This alcohol is required to be mixed with the gasoline according to a table prepared by the government. Until July 1, 1932, the alcohol used may be 96° Gay-Lussac; after that date it must be anhydrous alcohol.

In order further to stimulate the use of alcohol, all motor cars using alcohol-gasoline mixed fuel will be allowed a reduction of 70 per cent in federal, state and municipal taxes, and for three years from July 1 next, denatured alcohol produced in Brazil will be exempt from taxation. A special freight rate of 50 per cent of the rate on gasoline is also allowed on the railroads, and up to March 31, 1932, all machinery and materials imported for the erection of new or the improvement of existing distillation plants producing anhydrous alcohol will be allowed free entry into the country. A similar favor is granted to plants working bituminous schists and similar materials for the production of liquid motor fuel. The decree is to take effect on July 1, this year.

It is estimated that the effect of the decree will be to provide a market for 20,000,000 liters of alcohol annually, especially as it is planned to regulate the price so that the mixed fuel will be 20 to 25 per cent cheaper than gasoline.

Cuba

Opponents of a recently proposed alcohol monopoly measure in Cuba declared it would mean the virtual exclusion of petroleum products from the Cuban market.

Salvador

It is reported that the Government will soon pass a law making it obligatory to mix alcohol with gasoline before it can be sold.

Waste and Production Control

Well Known Consulting Engineer Asks Whether the American Petroleum Industry Will Solve Its Own Problems or Pass Into Government Control.

By Joseph E. Pogue*

New York, N. Y.

PETROLEUM resource, in common with natural gas, coal, and water-power, holds a position of especial importance in national economy. It supplies, besides commodity values, an important portion of the energy upon which the current type of industrial civilization rests. Efficient administration of the petroleum resource represents a goal that concerns not merely the petroleum industry, but involves industry at large and the public interest as well. For these reasons the problems of the petroleum industry transcend in implications their local and specialized aspects.

THE petroleum industry is frequently referred to as a wasteful industry, and the widespread emphasis on the need for conservation tends to accentuate this opinion. It is true that petroleum, particularly in the United States, is exploited with the accompaniment of grave wastes both of capital and the resource itself. The situation, however, stands in need of closer analysis, for the generalization is misleading if taken alone.

From a purely technological standpoint the petroleum industry is creditably efficient. A decade or so ago this was not the case, but in recent years the oil business has made notable advances in the development of technical proficiency. Geology as applied to oil finding, engineering as applied to drilling and production, and chemistry as applied to all refining have practically revolutionized the procedure in these departments of the business. In respect to its technological developments the petroleum industry has nothing to suffer in comparison with our most advanced industries.

* Address delivered before the Chamber of Commerce of the United States, Atlantic City, April 29, 1931.

Faults in Functioning

FROM an economic standpoint, there are serious faults to be discerned in the manner in which the petroleum industry functions. Production and distribution costs are too high, too much capital is employed in the business, the percentage of the underground reserve reduced to possession is too low, the volume of natural gas blown into the air is deplorable, and the coordination of supply and demand is too rarely attained as evidenced by an unwieldy inventory position. These conditions, admittedly serious, are not wholly the fault of the petroleum industry, although the economic policies of the industry have contributed to them. To a considerable degree they are the resultant of the system of competition and legal restrictions under which the industry is forced to operate. Here, again, it is desirable to dissect this situation, for if this is done it will be found that the competition-engendered wastes fall broadly into two categories of a different kind.

In the first place, conditions surrounding the production of crude petroleum are such that the fine body of technology available to the industry in this field cannot be effectively applied save in exceptional cases. And, the production of oil is accompanied by a degree of waste that ranks this activity toward the bottom of our industrial processes. The causes for this condition derive from the manner in which leases are made, and the failure of the law to protect the underground property of an oil operator from drainage through a neighbor's well. As a result the average oil field is subdivided into small competing leases which, denied the protection afforded other forms of property, are subjected to a system of off-set drilling that raises costs and precludes efficiency. The leasing habits of the industry and the unsoundness of laws governing the production of oil and gas, therefore, set up a wasteful competition at the source that distinguishes the economics of petroleum from the economics surrounding other raw materials.

Duplication of Facilities

ASIDE from the harmful competition forced upon production of petroleum by the faulty application of the law of property and the inertia of the petroleum industry in combatting this situation, the petroleum industry must operate under the same competitive system that surrounds private industry. This normal competition, as distinguished from the abnormal, or "pathological," competition that derives from the "robberability" of the oil lease, leads to an unnecessary duplication of facilities and to an expansion in costs. But, it serves as a safeguard to the public against high prices. Whether the disadvantages of unrestricted competition outweigh the gains is a question that concerns the broader aspects of our industrial system. The petroleum industry, however, has found it increasingly difficult to function at a profit under the burden of the specialized and general competitive forces that pervade it. The point to be emphasized here is that the petroleum industry carries a double load of competition, and under the two it has staggered into a condition of chronic overproduction.

During the past few years there may be discerned a very definite tendency toward the development of efforts and measures designed to modify the competitive forces surrounding oil. These developments appear to be more in the nature of an evolution than the result of a premeditated plan. They have arisen both within the industry and among governmental bodies—State and Federal. The movement has centered under the general idea of "conservation"; but, this term has come to take on in practice a broader implication than its ordinary narrow connotation.

Stages of Conservation

THE evolution of the "conservation" movement and its accompanying competition-modifying influences has thus far proceeded in four overlapping stages, although such a division doubtless oversimplifies the situation in the interest of clarity and emphasis.

The first stage was initiated with the formation of the Federal Oil Conservation Board designed to represent the public interest in oil, but the efforts of

the Board have turned more and more to a coordination of the industrial and public points of view. Without legal authority to enforce action, this body has nevertheless exerted an important influence. It has aided in general the efforts arising within the industry and among the oil states to modify the more extreme wastes growing out of competition.

The second stage had its inception in the development of the principle of ratable takings from oil leases, a movement represented by the commonly used term "proration." This principle came into prominence in 1927-1928, and involves a procedure to hold back from storage the developed surplus output of oil wells. The movement was a defensive measure against the momentum of overproduction. It had the backing of many oil operators, and it functioned in part through a system of voluntary cooperation and in part under the authority of state laws prohibiting waste. The movement was undoubtedly motivated by the desire to hold prices to profitable levels, although in this respect it finally failed. It may be perceived that proration is a plan for combating the competitive struggle between leases and for mitigating the overproduction-effects of general competition.

Proration Broadened

THE third stage in the evolution became evident when "proration" (at first an attempt to restrict the marketed supply of crude petroleum to the refiners demand) was broadened into an effort to restrict the marketed supply of the raw material to the consumers' demand for its principal product, gasoline. The motivating influence behind this transaction was the perception that refiners "demanded" more crude than needed to supply their consumer markets. Overproduction, in consequence, still continued. Restriction of refinery operations, could not be attempted through agreement, because of the antitrust laws; but this objective was sought by indirection through the employment of the educational force of periodic forecasts of consumer demand. Such forecasts were initiated by a voluntary committee of private economists and engineers reporting to the Federal Oil Conservation Board. Later this was supplemented by similar statistical reports prepared for the American Petroleum Institute and made public. The petroleum industry may claim the credit of a pioneer in seeking to establish a plan for its collective operations. It is obvious that the effective development of this idea is blocked by federal laws.

The fourth stage in the evolution under review is very recent. This latest step goes back to the question of state quotas in any system of curtailing crude oil supply. Its motivating influence was the failure of previous efforts to hold prices above cost, and the econmic distress thereby created among the citizens and in the fiscal departments of the oil producing States. In early 1931, at the instigation of the Governor of Oklahoma, an Oil States Advisory Committee was organized to represent the interests of the oil producing States. After preliminary consideration this Committee has recommended the formation of an Interstate Compact to coordinate the "conservation" activities of the oil producing States. This procedure, originally suggested by Secretary Ray Lyman Wilbur, will involve confirmation by the several State Legislatures and eventual ratification by the Congress of the United States. This step, if the recommendations are carried to fruition, will set up a combined State and Federal control of crude oil supply, which will logically lead to some form of price control.

No Clear-Cut Plan

IT is apparent that the evolutionary steps outlined above have taken place without any clear-cut plan, or consistent regard to their incidence upon the specialized or generalized types of competition involved. Throughout these stages in the growth of artificial control there have run two other more natural developments, representing the resultant of the interplay of free economic forces.

The first of these is the extension of the merger, or consolidation, movement, which has thus far been noteworthy and whose objective is the lessening of the number of competing units. The second of these is the progress of the petroleum industry in the development of the unit plan of operation, whereby the single oil pool is exploited as an entity instead of a chaotic assemblage of competing leases. This latter movement combats the specialized competition at the raw material source and strikes at the roots of waste in the prevalent system of crude oil production.

This movement has the backing of the more enlightened members of the petroleum industry, and even the Federal Government, itself the landlord in certain fields, has taken a prominent part in it, as evidenced by the unit plan for developing the major part of the great Kettleman Hills Field in California. The movement, which has constructive implications of the first importance, faces, however, grave difficulties in the form of inertia, tradition, and especially the perverted application of the laws of property in the realm of oil production.

Two Diverging Avenues

THE petroleum industry has thus arrived at a singularly interesting point. While it is not the purpose of this review to explore the future, two diverging avenues appear to open up, both emerging from the virtual collapse of the petroleum industry under its double load of competition.

The first avenue follows a path that separates into two branches, with one branch leading to the elimination of the specialized competition at the source, which would permit the petroleum industry to function on a parity with other industries; no new structure for the oil business is thus involved, merely the modernization of its foundation.

The other branch entails a revision, or modification, of the competition-enforcing laws that block the rationalization of the raw material industries in general; this procedure likewise embodies no basic structural change in the petroleum industry, merely an alteration in its legalistic environment. The second avenue follows a direction that leads to some form of governmental control; this course involves a new structure for the petroleum industry. The problem of evaluating the relative advantages of the alternatives must be left unsolved for the present; the question merits further attention.

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THE International Refinery Number of WORLD PETROLEUM will be published in July, and not in June as originally announced.

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Luxurious vegetation surrounds wells in the Isthmus of Tehuantepec, Mexico

International News and Reports

THE Standard Oil Company of California is starting oil drilling operations on the Island of Bahrein in the Persian Gulf.

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The Division of Production of the American Petroleum Institute will hold its first mid-year meeting at the Baker Hotel, Dallas, Texas, on June 3 and 4.

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Unit operation of the Kettleman Hills, California, oil fields started on April 1. Production for the time being will be restricted to 50,000 bbl. per day. Cost of new drilling will be born by an association headed by William Reinhardt.

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During the period from January 1 to February 28, 1931, 2,195 oil wells were completed in the United States against 3,357 wells for the same two months of 1930. Of the wells completed during these two months of this year, 937 produce oil, 420 gas, and 838 were dry.

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Plans of the Manchester Ship Canal Company to extend the docks at Stanlow on the Manchester Canal in England have been approved at the annual meeting of the company. The new work will triple the capacity of the terminal to handle petroleum spirit and increase the importance of what is already one of the largest importing and distributing centers of petroleum in England.

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Reports emanating from Dallas, Texas, say that France is negotiating for 100,000,000 bbl. of East Texas crude. While various French oil concerns may be enquiring for some oil, such a huge quantity would seem to be entirely out of the question. The import quantities allowed all the principal French companies under the new law are given elsewhere in this issue of WORLD PETROLEUM.

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Additional capital to expand the shale-oil production activities of the A. S. Eestikwioli (Estland Mineral Oil Company) which has an annual output of about 2,300 tons of crude and 27,000 tons of shale is being sought. The company produces benzine from shale oil and will concentrate on this product. The State oil plant of Esthonia produces about 375,000 tons of shale and 5,500 tons of crude.

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Mexican income from taxes on gasoline production for the month of February amounted to 1,545,530.12 pesos (approximately $772,765 U. S.) according to Mexican government reports. The Government anticipated an income of at least 20,000,000 pesos (approximtaely $10,000,000 U. S.) from this source during the current year as there has been an increased yield from this source each month of this year. The gasoline tax is expected to take care of road cost and leave a substantial sum for other purposes.

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Declaring the Gulf Oil Company's Barco concession contract to be a sound business necessity to Colombia, Minister of Industries Chaux on April 22 urged the Senate at Bogota to give its ratification. A vote is expected by the end of April. In fact, President Olaya is determined to keep Congress in session until they approve or throw out the contract which the President already has signed.

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The International Hydrogenation Patents Company has been formed by a group composed of the Standard Oil Company of N. J., the Royal Dutch-Shell organization, and the Imperial Chemical Industries, Ltd. The purpose of the company is to handle license negotiations for hydrogenation of oil and coal in countries other than Germany and the United States. The company's registered office will be at Vaduz, Leichtenstein.

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Dr. E. H. Boomer of the University of Calgary, will conduct experiments this summer with the manufacture of benzine from Turner Valley waste gas. For this work the government of Alberta is specially constructing a semi-commercial plant. A 99 year franchise has been requested of the provincial government by the Hercules Consolidated Mining and Smelting Company of London. R. Crowe Swords, president of the company, plans to concentrate all the waste gas from the Turner Valley fields into a single pipeline and utilize the terrific gas pressure to drive specially designed turbines for a huge electric power plant. An auxiliary steam plant would then burn the gas under boilers. Current is expected to be generated at three-tenths of a cent per K.W.

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Australia consumed 418,613,334 Imperial gallons of motor spirit in 1930, says Thomas Courtney in the Sydney Morning Herald, imported at a net cost of 13 cents per gallon. The previous day the same journal gave petrol importations for the Commonwealth last year as being about 200,000,000 gallons. Presumably the difference was refined in Australia. The journal also gave imports into New South Wales alone as being 80,520,593 gallons for the year ending June 30, 1930; 72,121,716 gallons for 1929, and 63,872,535 gallons for 1928.

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Money that the Mexican federal government collects from importers of gasoline is not an import levy, but the prepayment of the domestic tax on the commodity, it is pointed out by Mexico City oil men. Mexico has no tariff upon foreign gasoline. The pre-payment of the sales tax when gasoline arrives in the country is the means the government takes to insure collecting this levy from all importers. It is explained that this procedure resulted from the numerous small retailers of gasoline on the United States border who import frequently in small quantities, making it difficult for the Mexican government to be certain that the sales tax is paid in every instance.

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Apropos the oil discovery in Northern Italy by the Azienda Generale Italiana Petroli, at Orsini No. 1 near the town of Parma, as reported in an earlier issue of WORLD PETROLEUM, it is not exaggerated to state that the AGIP owes its discovery of oil almost entirely to geophysical research work. The company has spent a great deal of money upon the organization of a special geophysical section which has been working in the district for more than three

years. In 1929, hopes were confirmed by the discovery of considerable quantities of natural gas after a first well had been drilled; since then no efforts have been spared to find oil.

The area in which this discovery has been made is situated at about four km. from the Appenine hills. The nearest village to the well goes by the symbolical name of "Fontevivo" meaning Living Fountain.

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Development of an oilfield in the State of Monogas, Eastern Venezuela, will be started shortly by the Venezuelan Refining Company (Atlantic Refining Company) together with the Creole Petroleum Corporation (Jersey Standard).

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The Anglo Persian Oil Company has applied to the Albanian Government for permission to cease exploration and drilling in Albania, where it has been wildcatting on 80,000 acres since 1925. Heavy oil in small quantities was struck in two wells, but results do not justify continuation of work under today's conditions.

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A shipment of 100 bbl. of crude oil has been made by the South Australian Oil Wells Company, Lakes Entrance, Victoria. This oil has been produced from five of the company's six wells which have been drilling for some time. The oil will be refined at Newcourt, Victoria, and converted into tractor distillate, lubricating oil and bitumen.

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A recent compilation by the National City Bank of New York covering the earnings of 77 oil companies for last year and the previous year shows a decline in aggregate earnings of nearly fifty per cent but a gain in net worth.

The detailed figures are as follows:

	1929	1930	Change
	$	$	
Net profits.....	679,972,000	346,155,000	—49.1%
Net worth Jan. 1	6,265,712,000	6,969,964,000	+11.2%
Rate of return...	8.5%	5%	

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Exports of oil refinery equipment from the United States for the month of January, 1931, amounted to $1,672,455 while oil well drilling machinery exports were valued at $537,847. Other drilling tools amounted to $70,211.

There was a drop, however, during the month of February, oilfield equipment exports being $349,936; other drilling apparatus $58,710, and refinery equipment $603,484.

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Activities of the Transcontinental Petroleum Co. in its holdings in northeastern Mexico are being watched with great interest by the Mexican oil industry, which sees possibilities of the opening up of a new petroleum field in that section. The Company has partially drilled its first well in the zone. The drilling was made on the Jabali Ranch, near the town of Reynosa, a few miles southwest of Matamoros, on the Rio Grande. Transcontinental holds concessions to about 250,000 acres in the zone which is known as the Rio Bravo tract, and consists of upward of 1,000,000 acres.

The partial drilling of the well produced a considerable quantity of gas. Indications that petroleum will be found, appear to be encouraging and the Company has made arrangements to sink the well deeper.

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The recent judgment of the British court in favor of the General Asphalt and Barber Asphalt companies against the Anglo Saxon Petroleum Company (Royal Dutch-Shell) with respect to the Vigas and Valladares concessions claims was recently reversed by the Court of Appeals. The American companies have appealed and it is expected that the case will go before the House of Lords.

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Roumania's Low Prices a Menace

FOLLOWING the final attempt of Mihil Manoilescu, Minister of Industry and Commerce, Bucarest, Roumania, to produce an operating agreement between the main factors of the Roumanian oil industry, he appears to have dropped all his constructive interest. This was particularly noticable after his setback, experienced by having to withdraw the bill that would have granted a concession for the building of a pipeline by an Austro-American group. American interests were represented by the National Supply Corporation, and the line would have run from Bacoi to Constanta. There was no one in the Chamber of Deputies, where opposition was strong on account of the supposed onerous conditions, in a position to back the plan vigorously. Had the pipeline been constructed it would have been of considerable value to the petroleum industry of Roumania in general as it would have facilitated transportation of oil and reduced its cost at the seaboard.

At present the domestic oil industry is pining away from lack of sufficient iniative and energy to force a comprehensive plan to end the existing deadlock among producers and refiners. Crude production is still averaging around 12,000 bbl. per day, and there is no drilling activity, the leading companies for the last three months having only averaged about 3,000 feet each.

In the feeble struggle to keep going, Roumanian oils are being sold on the European market at prices calculated to destroy all semblance of profitable price structures, and as a result are becoming a serious menace. Russia is bearing the blame in the daily press of the world as an invader and destroyer of international markets, but actually Roumania, with its chaotic internal petroleum conditions, is becoming the greater menace and disturbing factor, as the Soviets are maintaining the same prices in Europe as the major international oil organizations, regardless of what they are doing further afield.

Roumanian gasoline is below Gulf prices; quotations were given in March WORLD PETROLEUM. Roumanian kerosene was sold during the greater part of last year as low as 80 cents per bbl., and today's quotation is $1.40 compared with the American price of $2.

A correction should be made! On page 245 of the March WORLD PETROLEUM the new profilic oil field mentioned is not Bustenari as stated, but Boldesti.

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International Drilling Congress

A COMPREHENSIVE exhibition of models of modern drilling equipment is planned to be held in connection with the Third International Drilling Congress, to be held in Berlin in 1933. American participation is cordially sought. During the Congress an extensive tour of the German oilfields will be made. The address of the Drilling Congress is Alte Jakobstr. 18/19, Berlin.

Gyro Refinery Built in Record Time

Special Plant for Gyro Process of Vapor Phase Gasoline Constructed in Five Months at Toledo. Refinery Also Completed in England. Another Building in Mexico.

ONE of the most interesting of modern petroleum refining constructions was put into service recently at Toledo, Ohio. This is a gyro vapor phase refinery erected in record time by the Pure Oil Company, of Chicago, Ill. Several other plants are in operation in the United States, Canada and England, for other companies, but the new Toledo refinery is having two novel features added which are referred to later in this article.

While the Pure Oil Company would have preferred to have followed a policy which would not have involved construction of additional refining units under present conditions in the oil industry, it had four great assets which it was obliged to consolidate in order to make them productive, and this new refinery was an essential part of the plan. These were,—an oil field in Michigan, where the company has extensive acreage; the great Van unit operated field in Southwest Texas, the very large marketing outlet in the Cleveland, Toledo and Detroit district through affiliation with the Hickok Petroleum Corporation, and the Gyro Process which would produce a vapor phase gasoline of high anti-knock rating. Obviously this could only be done through the funnel of a special refinery. This refinery needed to be equipped so that it could successfully blend the different types of oil to produce unusually high-quality anti-knock gasoline, and it needed to be located favorably to the markets. How these two widely separated fields were physically linked together to bring about the desired end is another story involving the construction of the Ajax pipeline from Oklahoma and the Pure-Van line to the Gulf.

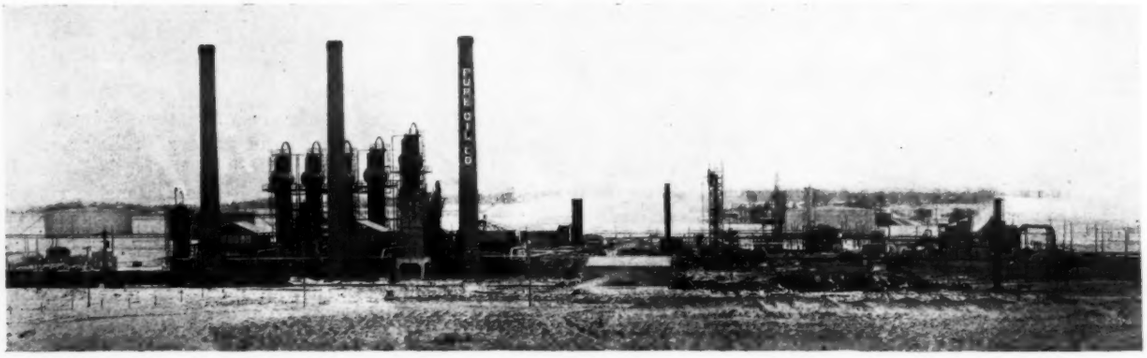
It might be mentioned, however, that planning the consolidation of these four assets by the Company's executives was comparable with a gigantic chess game. It included, for example, the pipeline from the Michigan fields to Lake Huron, the delivery of oil from the Van field through the Pure-Van pipeline to Smith's Bluff and Marcus Hook refineries, the permanent backing and supply of the Heath and Cabin Creek refineries, and development of Great Lakes transportation for gasoline and fuel oils, and the reduction of transportation costs throughout the system.

The Toledo refinery is a unique installation for the refining of a special gasoline for an established market from two crudes of widely different quality. It is not a large installation and the investment in it is not great. Nevertheless, it solves some otherwise complicated problems, not the least of which is the production of a superior gasoline from standard crudes.

It is rather unique to complete a plant of this size (about 8,000 bbl. crude capacity and 3,600 bbl. cracking capacity) and have it in full operation in a period of five months during the winter season. During this time 650 carloads of material were received, unloaded and erected. To give probably a better realization of the volume of material involved, if all of these cars were coupled together they would make a solid American-standard freight train six miles long. In this time also were installed seventy miles of pipe; tankage erected having a total of 24,962,000 gallons or 594,333 bbl., and one and one-half miles of railroad track laid. The details of the plant, as designed by the company's Refinery Control Board's engineers and chemists, were executed correctly in minute detail so that it was possible to start up during February last without any undue delays whatsoever.

A total of 672 finished blueprints covering every detail of the construction were turned out by the drafting force of 50 men. As practically every unit in the refinery was specially designed, from the foundation up, the magnitude of this task may be appreciated. In addition to the work of preparing plans and specifications, all materials were requisitioned by the head office in Chicago, Ill. Keeping the materials rolling so that the field forces would not be held up represented one of the most difficult phases of the job.

The engineering department, particularly B. W. Winters who was construction superintendent on this job, is to be complimented. His staff, says R. C.



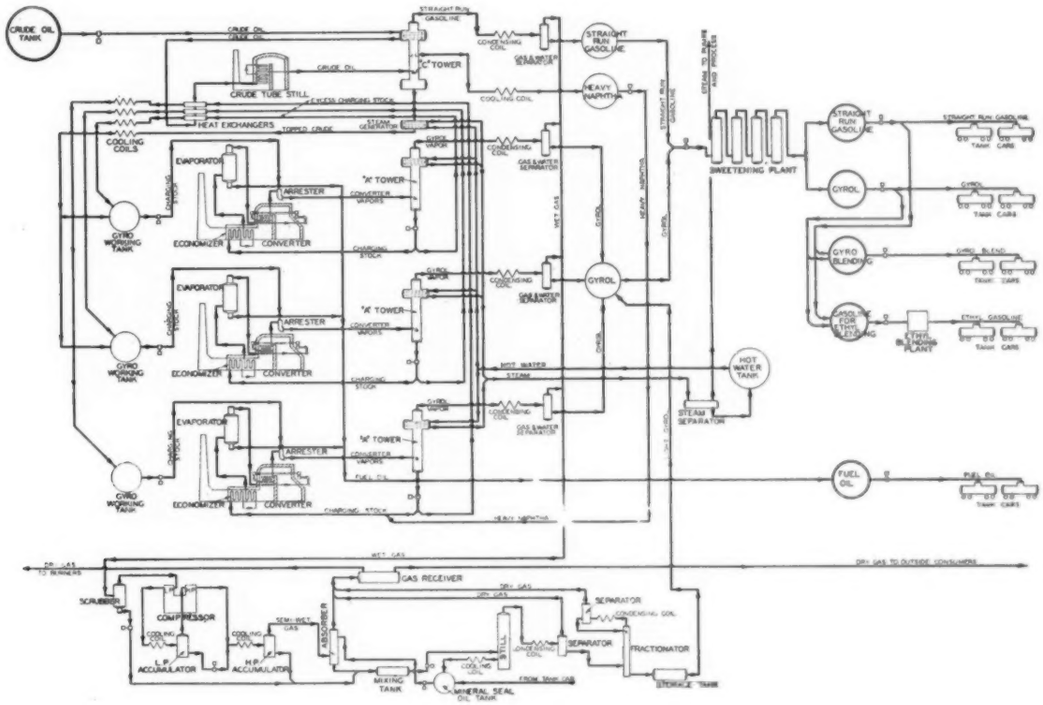
New gyro-vapor phase refinery of Pure Oil Company

Osterstrom in "The Pure Oil News," consisted of engineers Wood, Michener and Mathy. These men directed the large construction force, averaging 550 men daily.

The company's purchasing organization under Mr. Melick and Mr. Meehan, also deserves credit, as their close cooperation with the engineering department made it possible to have the material on the ground when needed, and, of course, this was vital to realize the speed obtained in this construction record. During the work there was no major accident involving loss of life or permanent disability, although there were 180 minor accidents, such as feet and just south of where Otter Creek flows into Maumee Bay. The ground is fairly high and quite level with excellent drainage. Soil conditions were found very favorable for foundation work.

In making a connection with the new Ajax Pipe Line to the Toledo refinery the Pure Oil Company was able to augment from this line a supply of crude oil from its own Michigan field, so that a plant of economical size and adequate to supply marketing requirements could be operated. One special feature is that with three of the latest type Gyro vapor-phase cracking units, compressor and absorption plants and treating equipment, equipped with a polymertization plant, and will handle up to 750,000 cubic feet of gas per day. It will also be so equipped that heavy residues can be reduced to pitch or coke, thereby practically consuming all the heavy petroleum products which now are difficult to dispose of at a profit. As a matter of fact the Gyro licensors have purchased from Europe rights to patents for blending rich gas produced by the Gyro process with low B.T.U. gas for making a cheap fuel for domestic and industrial purposes, and which is expected to open a wide field in overseas countries where fuel is scarce.

On this page is a flow chart of the



Flow chart of the gyro-vapor phase refinery at Toledo

blisters and a broken arm. Of the total 563,000 man hours, the average daily number of men employed being 560, time lost through accidents amounted to only 0.668 per cent, which is considered very small.

The new plant is located approximately six miles north of Toledo and is under the managership of R. D. McClaran. It covers about eighty acres, which is ample for all the necessary equipment and tankage and still leaves sufficient room for considerable future expansion. It is served by the tracks of the Toledo Terminal Railway and has shipping facilities on the Great Lakes by means of pipelines to docks located in Otter Creek

the refinery is complete and produces a gasoline of very high anti-knock value. Such compact equipment requires a minimum of operating labor, and eliminates the necessity of boiler houses and a great deal of other auxiliary equipment which are ordinarily vital adjuncts to the proper operation of a refinery. This makes possible remarkably low investment costs. With properly designed fractionating towers, great flexibility is obtainable from a plant of this type.

Interest in the refinery will be added as one of the converters is being

Toledo refinery. In connection with this it should be explained that 35 to 40 percent of the gasoline fraction, that is to say, the light end of Michigan straight run, has a relatively satisfactory anti-knock value. In the distillation of this crude, this amount of straight run gasoline is taken off. The flow sheet will give an idea of the operation. The Michigan crude is pumped from storage tanks to the refluxers in the top of fractionating tower "C", then through the exchangers to a small tube still where final heating is obtained by complete vaporization. The mixture of vapors and liquids leaving the tube still is delivered into fractionating tower "C", where the gasoline

content is split and taken off in two streams.

Next, the light fraction leaves the top of the tower and goes through condenser coils, gas and water separators, and into run-down tanks, from which it is delivered to continuous treaters and finally into storage and blending tanks. The second fraction, which is the heavy fraction, is taken off below the light stream, through condenser coils, etc. to run-down and storage tanks. This second fraction is further processed. The remaining part of the crude is picked up by hot oil pumps from the bottom of the fractionating tower into the working tanks and deliveries made from these working tanks to the arrestors.

It is understood that the vapors are being delivered from the converter section into these arrestors at the same time that the charging stock is pumped to the arrestors. The mixture of vapors and liquids passes from the arrestor to "A" tower, where the cracked distillate is taken off, flowing through condenser coils, etc. to run-down tanks. Part of the liquid in the bottom of the tower is also pumped to the economizers, as shown in the flow sheet, and after passing through this section of the unit it is delivered to evaporators, where the fuel oil content is dropped out,—the vapors passing overhead to the converters for cracking. The heat in the hot fuel oil is utilized to heat incoming crude oil by means of heat exchangers.

The operation of the Mid-Continent crude; the crude is delivered from the working tanks in the manner described, but the gasoline is taken off in one stream since it is unnecessary to rectify any portion of it for anti-knock value. This gasoline is delivered to continuous sweeteners, having first passed through the condensing coils, etc. in the manner also described above. When desired, a kerosene fraction can be taken off from the "C" tower.

With three units, and operating on Michigan crude, two of the converter sections are utilized for cracking the gas-oil content of the crude, while the third is used for rectification of the heavy gasoline fraction from this crude. In the rectification step, this heavy gasoline fraction is charged through heat exchangers to the economizer, thence through the converter section, and remarkable volume recoveries are obtained. An excess of 60 percent of gasoline is normally obtained in this operation—the gasoline having anti-knock value of Ethyl standard. There is quite a demand for Ethylized gasoline in the territory served by the refinery and for this reason the plant has been equipped with an Ethyl blending plant. The oil pump house is 123 feet long by 26 feet wide, and contains 12 electric-driven pumps which handle all transfer work, unloading of incoming crude and loading of outgoing products. These pumps are motor-driven centrifugals with the exception of the fuel oil pump which is of the triplex type. The floor of the pump house is four-and-one-half feet below grade line, thus giving a positive suction head to all pumps and lending greater efficiency to all pumping operations.

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Chemistry Makes Synthetic Lubricant

By F. W. Sullivan, V. Voorhees, A. W. Neeley, and R. V. Shankland,
of the Standard Oil Company of Indiana

SYNTHETIC lubricating oils now promise to take their place in the long list of products on which chemical research has improved over nature. And, strangely enough, they are made from paraffin wax, the very constituent of petroleum which the oil industry has spent many millions of dollars to find ways of removing from lubricating oils in present refining processes. The writers read a complete paper on this subject at the recent meeting in Indianapolis, Ind. of the American Chemical Society.

Present lubricating oils are complex mixtures of hydrocarbons made from the heavier portion of petroleum, after distilling off gasoline and kerosene, and then refining to remove undesirable constituents such as dark colored asphaltic bodies, petrolatum, wax, etc. Starting with the idea that even the best of these complex mixtures of hydrocarbons could not possibly constitute the ideal lubricant, chemists of the Standard Oil Company of Indiana have been working for several years to determine, first, what single hydrocarbon or narrow group of hydrocarbons makes the best possible lubricant and, second, whether such a lubricant can be made by synthetic chemistry.

A long and careful study of a great many natural oils indicated that the ideal lubricant would be made up of hydrocarbons having in their molecules approximately two hydrongen atoms for each carbon atom. When such oils were made synthetically, however, it was found that those oils having the carbon atoms arranged in long chains were much superior to those in which the carbon atoms were connected in the form of rings or clusters. In many natural oils these same highly desirably hydrocarbons appear to be present in small proportions, but it is impossible to separate them from the many other inferior hydrocarbons associated with them.

Now the problem was, how could these remarkable oils be obtained on a large scale? After studying many different methods of synthesizing hydrocarbons, the chemists found that the most practical process was the combination or "polymerization" of certain hydrocarbons known as "olefines" which had the desired composition of two atoms of hydrgen to one of carbon. Not just any olefine would do, however. Ethylene, which can be made from grain alcohol, or from refining gases or coal gas, gave an oil far inferior to natural oils. Other olefines behaved in a similar manner. Only a certain type of olefine could be used, and olefines of this type were rare and expensive. Therefore, a cheaper source of these hydrocarbons was sought. The source finally hit upon was paraffin wax. The wax, however, cannot be used in its original state. It has to be put through a chemical change by "cracking" methods similar to those which are nowadays much used in producing gasoline. After being "cracked" under certain conditions it yields the kind of olefines needed, and "polymerization" of these produces a very superior grade of lubricating oils.

The new oils can be made in any desired viscosity. They have a pale straw color, high resistance to oxidation and sludging, very low pour test, and low volatility or evaporation tendency. Above all the new oil is more resistant to changes in temperature than any known natural oil. This property prevents its thinning and losing body at high temperature, and at the same time prevents excessive thickening in cold weather.

While the cost of the raw materials and the complicated operations involved in manufacture make these synthetic oils rather expensive, they are now being made commercially by the Standard of Indiana.

Methods of Straight Hole Drilling

This Article is Typical of the Many Excellent Technical Contributions to Oil Field Engineering in the Petroleum Engineering Handbook, Published by World Petroleum.

By John F. Dodge

Professor, University of Southern California.

UNTIL the year 1927 practically no attention was paid to the straightness of a rotary drill hole. The depths to which drilling was being done at that time are now looked upon as comparatively shallow and the equipment far from being equal to that now in use. With the coming of heavy seamless drill pipe, hard facing bits, larger pumps, and powerful twin engines, greater speed became possible and operators soon found that greater speed frequently meant crooked holes. By 1928 the crooked hole problem was recognized as being of prime importance and the Division of Development and Production Engineering of the A.P.I. chose "Straight Hole Drilling Practice" as its principal subject for study for 1929. A great deal of study and research was carried on by engineers of the various companies throughout the country and a number of very valuable papers presented at A.P.I. Sections meeting at Los Angeles, Tulsa, and Houston. As National Secretary of the Drilling Practice Committee, the writer presented a compilation of the results of these studies at the Chicago meeting of the A.P.I. in December, 1929. A considerable part of the data and conclusions here given is taken from these studies and papers.

Definition of Straight Hole

In order that there may be a clear understanding of the terms employed it is believed advisable to offer one or two definitions or statements of terms. By "straight hole" is meant first a vertical hole. This is perhaps obvious but it has been pointed out in a number of papers appearing from time to time in current magazines that a hole might be started with a certain vertical angle and be drilled to completion with no further angularity and would therefore be technically a straight hole. This hole might be worse from an operating standpoint as well as from the information standpoint than a slightly crooked hole, and certainly would be from the property-line standpoint. Secondly, it is realized that no hole is ever drilled exactly vertical to its completion. For the purpose of this discussion it is somewhat arbitrarily assumed that a reasonably straight hole is one which in the upper half (3,000 to 3,500 feet) does not deviate more than two or three degrees from the vertical and in the lower portion the verical angle does not exceed six to eight degrees. Anything over eight degrees at the bottom is not believed to be even "reasonably straight.

It is further considered that to be classed as reasonably straight such deviation as exists should be continuous in any one direction, but should return toward the vertical from time to time and that the rate of change should be gradual, that is, there should be no sudden kinks, even if the total angularity is not great. This is the more usual type of reasonably straight hole, and frequently examination of records where complete surveys are available shows that the deviation angle of such a hole changes its bearings at different points in the hole so that the course followed may actually corkscrew into a fair approximation of a vertical hole.

The reasons why a bore for an oil well should be kept straight may well be considered under two divisions: (a) To make possible a correct and accurate interpretation of the geological and other data obtained during the drilling of the well. (b) Mechanical factors affecting the actual drilling and subsequent operation of the producing well.

The first class of reasons has been discussed by the writer under the subject of well surveying. The second class, the mechanical reasons, have been summarized by R. Van A. Mills in an article in the Oil and Gas Journal as follows:

Drilling Troubles Caused by Crooked Holes

1. Excessive depreciation of drill pipe caused by crystallization, and permanent bending and kinking of pipe. Some contractors make it a practice to use new drill pipe on every fifth hole.
2. Twisting off of drill pipe.
3. Costly fishing jobs.
4. Difficulties of fishing jobs increased by crooked holes.
5. Loss of drilling time on account of troubles here cited.
6. Sidetracking jobs.
7. Crookedness of holes increased by sidetracking jobs.
8. Difficulties in running casing in crooked holes.
9. Damage to casing caused by flexure.
10. Difficult or impossible to finish some rotary holes with cable tools.
11. In extreme cases, impossible to run cable tools through casing in crooked holes.
12. Loss of circulation through other holes where wells drift close together.
13. Line cutting of casing, especially in combination drilling.
15. Collapsing of casing due to line cutting and unequally distributed stresses caused by casing flexures.
16. Excessive consumption of power because of increased friction.
17. Cost of drilling unnecessary footage due to extra length of crooked holes.
18. Time lost in drilling extra footage caused by crooked holes.
19. Damage to neighboring wells, or from neighboring wells, caused by actual intersection or through accidental mudding or cementing of one well by another. The frequently reported migration of mud fluid from one well to another is undoubtedly due to wells drifting close together in many cases.
20. Abandonment of holes caused principally by unsuccessful fishing jobs, holes drifting off structure or becoming too crooked to use, and the chance intersection of one hole by another so that one of them must be abandoned.
21. Difficulty of subsurface correlations especially in determining where to set casing to make proper water shut offs.

Production Troubles Caused by Crooked Holes

1. Inadequate and misleading subsurface information.
2. Well spacing and surface locations lose their significance from subsurface point of view.
3. Inadequate testing and drainage of productive sands.

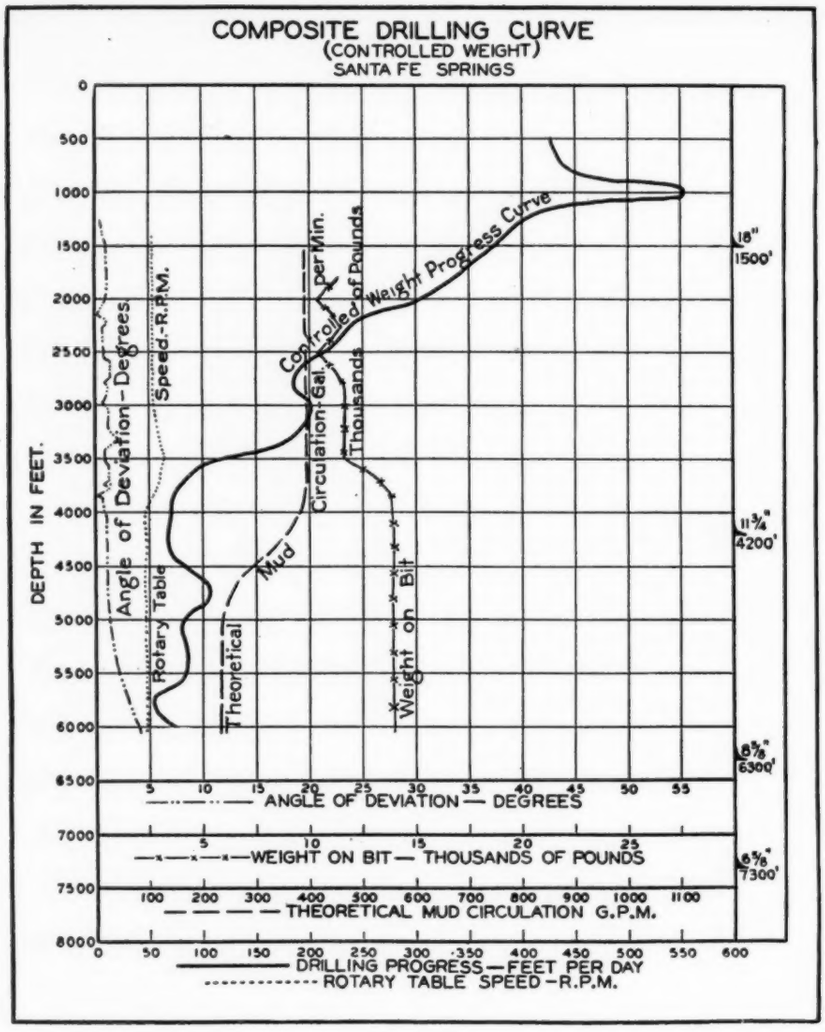

Figure No. 1

4. Excessive wear and failure of sucker rods.
5. Rod cutting of tubing.
6. Excessive wear of pump plungers.
7. Difficulties in getting plunger to enter working barrel except where insert barrels are used.
8. Difficulty in properly counterbalancing the pumping equipment in crooked holes.
9. Difficulties in swabbing caused by casing flexures and line cutting.
10. Excessive power consumption caused by friction losses in pumping wells.
11. Difficulty in running tubing catchers.
12. Accentuation of fishing troubles, especially in the loss of time in recovering broken rods or parted tubing.

To the latter might well be added excessive wear on tubing collars from deep crooked holes. Operators in Long Beach and other deep fields are being forced to replace ordinary collars with a type provided with antifriction rings due to this excessive wear, causing leaking tubing and finally failure, possibly resulting in a dropped string.

Principal Factors

Studies of the A.P.I. committee in 1929 resulted in the conclusion that the following factors were of prime importance in drilling a straight hole.

1. A vertical start.
2. Light weight on the bit.
3. Proper type of bit.
4. Moderate rate of circulation.
5. Mud sufficiently heavy to minimize washing and to insure prompt removal of cuttings from face of hole.
6. Concentration of weight adjacent to the bit.
7. Use of oversize or stiffened drill stem immediately above the bit.
8. Use of guides to center drill pipe on hole.
9. Avoidance of rat holing or other unnecessary change in size of hole.

Factors which were considered by the committee but which the majority of opinion relegated to secondary or questionable importance as far as straightness of hole is concerned are:

1. Speed of rotation of drill pipe.
2. The use of casing protectors on drill pipe.
3. Type of power used.
4. Extra precaution in drilling out cement.
5. Inclination of strata penetrated.
6. Direction of rotation of drill pipe.
7. Hydraulicking action of mud stream.

(1) In starting a rotary hole the usual practice is to level the table carefully after it has been checked for line with the freely hanging hook and then allow gravity "to point the kelly." Some operators take precautions to hold the kelly vertical by ring guides attached to the derrick corners, checking its position at intervals with a level bubble. These operators also take the precaution to remove the elevators from the hook while drilling until after the first conductor has been set and cemented. The conductor should be checked for plumbness and straightness before being cemented in place. The use of large heavy drill pipe is particularly recommended by many operators for the first 1500 feet of hole or deeper if possible.

(2) Of all the factors listed, the question of light weight on the bit has certainly attracted the most attention and is probably the most important. During the deep drilling campaign in Santa Fe Springs in 1929, weights of 10,000 to 20,000 pounds on the bit were spoken of as light weights. Now operators are using weights of from one-half to one-quarter of these amounts and obtaining excellent results.

In a personal communication to the writer, R. R. Robinson of the Martin Decker Corporation says:

> Just what constitutes the "light weight" is hard to say. In the past year many operators have reduced their maximum allowable weights from 5 indicator points to 3 and 2 points. With 8 lines strung in the normal drilling range this would represent a reduction from a maximum of 18,000 to 20,000 pounds down to a maximum of 7,000 to 12,000 pounds.
>
> A few instances may be cited: The Allied Petroleum Corporation drilled one well at Lawndale using a maximum of two points of weight from top to bottom. Five thousand seven hundred and three feet of 12¼ in. hole was drilled in fifty

drilling days: no fishing jobs, 69 cores, with 96 per cent recovery. The hole was found universally straight. Following this experience they drilled their Garrison No. 1 at Long Beach, running a 12¼ hole to 5405 feet. In this latter well the weight was limited to one point, 8 lines up. A survey at 5000 feet showed a very straight hole. At the present time the companies in California have made the most complete investigation of drilling weights and are using the lightest possible weight on bit, which will penetrate the formation. Straighter holes have invariably developed.

Although these are specific instances, a number of similar results have shown it possible to make good progress by using weights as light as one point, which would correspond to an actual weight between 3500 and 4000 pounds. With 7⅞ inch drill pipe some operators are using a maximum of one-half a point and making satisfactory footage, which with six lines figures about 1350 pounds.

Mr. Robinson also states that in his opinion in a deep hole the drilling probably is not accomplished solely by the static weight on the bit. He says:

> Pump pressures and pump pulsations theoretically will create a vertical vibratory action of the bit as tests would seem to indicate in making holes especially with light weights. Light weight will also permit the drill pipe to spiral freely around the falls of the hole, continuously changing its bearing points, whereas excessive weights will tend to maintain it is one position for a considerable length of time, This latter point may be easily demonstrated with a wire in a piece of heavy glass tubing.

Many engineers have called attention to the importance of keeping the drill pipe in tension to avoid the buckling from compression which will result, in a long column, should the weight of any considerable length of the pipe be placed on bottom .

Mud Pressure

J. T. Hayward, in commenting on the writer's paper presented at Chicago, calls attention to the possibility that differential mud pressure at the bit may actually result in putting the last joint of the drill pipe in tension. Mr. Hayward says:

> It is herein submitted that the mud fluid pressures in the bottom joints of the drill pipe play an important part in keeping the hole straight and to a certain extent govern the weight that can be safely carried on the bit during drilling. The fluid pressure referred to here is, of course, the difference between the pressure in the drill pipe and that outside it at the same level. This differential pressure it is suggested, has a stiffening effect on the pipe that may prove to be of considerable importance.
>
> The ratio of the diameter of a string of six-inch drill pipe to its length in a 5000-foot hole is as 1 to 10,000. A column of such a diameter to length ratio would tend to buckle under compression even of the lightest nature, and that a straight hole should ever be drilled with such a drill would, at first sight, appear to be surprising. It is suggested that it would in actual practice be very difficult and that the hole would be liable to go crooked whenever there was any compression in the bottom joints.
>
> The cross sectional area of 6⅝ inch drill pipe, minus the water courses in the bit is roughly 27 square inches. Considering the case of an 11-inch bit, drill collar, etc., and a mud fluid pressure of 290 pounds per square inch at the bit acting on the cross sectional area mentioned above, there would be a tension of 10,000 pounds in the last joint of the drill pipe, when the bit was cut off bottom. A pressure of 10,000 pounds could therefore be put upon the bit without putting the drill pipe in compression.

This somewhat revolutionary idea of Mr. Hayward's may result in a new means of controlling the actual pressure of the bit on the face of the bare hole.

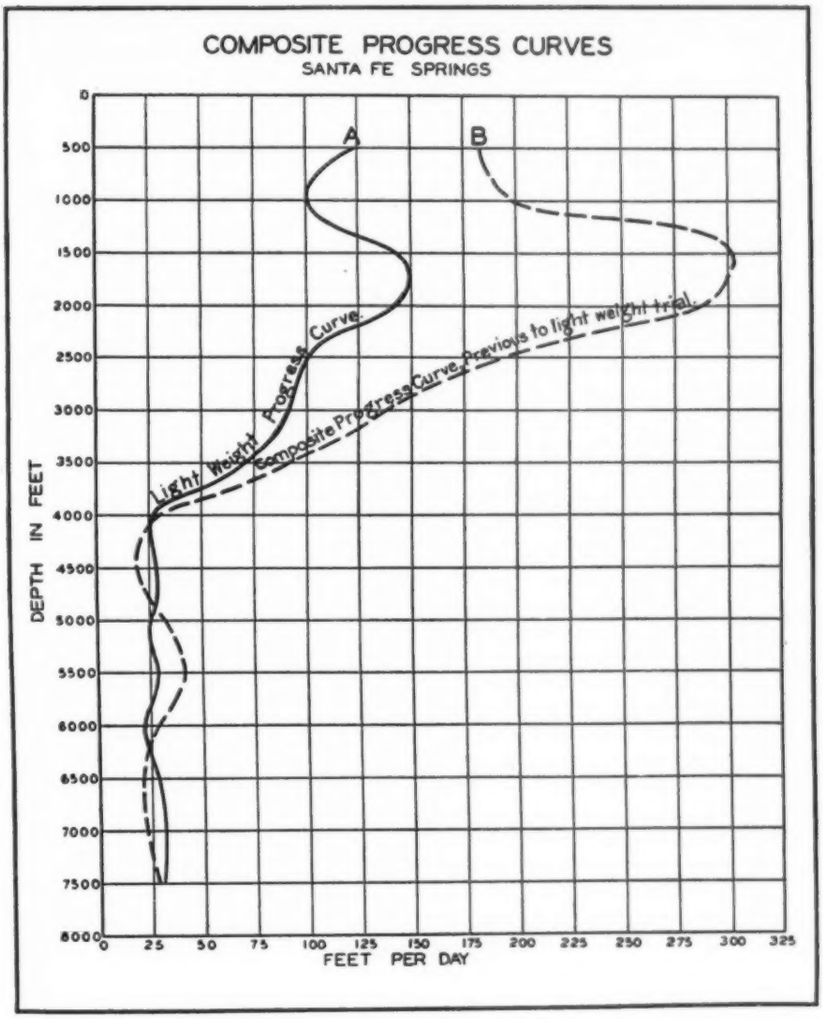

Figure No. 2

Control of Weight

Automatic control of the weight on the bit by devices operating either in the drill stem or at the surface of the hole

has received much attention of late.

Devices in the drill stem are commonly of the slip-joint type used in conjunction with a long heavy drill collar and so arranged that the driller must hold up the weight of the drill stem above the drill collar or the telescoping of the slip joint will close a port which will cut off the circulation of the mud. One such device also runs up the pressure when the slip joint is fully extended, thus signalling the driller to lower his drill pipe. Excellent results have been reported by some operators with these devices, the chief objection being lack of flexibility to suit formations of different hardness.

With the exception of the hydraulic rotaries of the Doheny-Stone (Hydril) and Sheldon type the automatic feed at the surface is still in the highly experimental stage. Even in the case of the hydraulic feed the control is generally manual and not automatic although a high degree of weight control should be obtained with such equipment.

In general, comparisons of results obtained by varying the weight on the bit may best be made in terms of pounds per inch of cutting surface of the bit but this method must obviously be confined to results obtained from a single type of bit.

(3) The proper type of bit to be used should, in the opinion of the A.P.I. Drilling Practice Committee.

(a) Run concentrically—many bits run eccentrically and tend to cut an oversize hole which would appear to give opportunity for deviation to begin.

(b) Make good footage without excessive weight.

(c) Not wear appreciably out of gauge before becoming dull on bottom.

(d) Be slightly supported on the sides but not cut or ream as this will tend toward an oversize hole as above.

(e) Be accurately dressed. This refers in particular to bits of the fishtail type which should be dressed to a definite tolerance of say ⅛" to avoid one wing leading and thus causing a deviation. A template should be applied to the dressed bit before it leaves the shop, and bits deviating from the template by more than the established tolerance rejected.

(f) Be reasonably sharp on the cutting edges if of the fishtail type. Many operators are of the opinion that dull bits and recut cones are prolific causes of crooked holes. The question as to when a bit is dull has aroused much discussion. In general it is believed that a bit should be considered dull when moderate progress can no longer be secured without increasing the weight beyond that established as allowable. If a bit ceases to make progress it is either dull or the formation has changed. In any case, in practice, etiquette among drillers is apt to decide when a bit is to be pulled rather more often than not, since it is not considered good form to go off tour with a bit of questionable sharpness in the hole.

(g) Have vertical or nearly vertical water-courses to prevent washing an oversize hole.

(4) Moderate Circulation Rate. Undoubtedly from a theoretical standpoint the rate of circulation should be proportional to the cross sectional area of the space between the drill pipe and wall of the hole and should give a velocity somewhat greater than the maximum rate of settling of cuttings through the mud. Practically there has not been sufficient attention paid to this detail to warrant any definite statement as to good practice.

(5) The mud should be of such a density as to minimize washing with the resultant formation of cavities which will allow the drill pipe to kink and deflect the bit. In this connection it might be noted that the hydraulicking action of the jet is considered to be of distinctly secondary importance except in bits with inclined jet passages.

(6) Concentration of weight adjacent to the bit. A long stiff section immediately above the bit will tend to throw the first point of inflection caused by the long column action of the drill stem higher up the hole. This should reduce the tendency of the bit to wobble and thus enlarge the hole. The concentration of weight at the bottom is believed by many to have a plumb bob effect.

(7) Use of oversize or stiffened stem immediately above the bit is at least theoretically desirable and is endorsed particularly by the operators in the Gulf Coast and Oklahoma fields.

(8) Roller guides and double three-point reamers are used extensively in Texas and Oklahoma, but have not found favor in California to any great extent perhaps due to the difference in formations encountered in drilling.

(9) Ratholing ahead is almost universally believed to be conducive to a crooked hole as experimental work with miniature drilling outfits has shown that the small bit almost always starts off center. In a paper delivered before the Los Angeles Chapter of the A.P.I., Mr. F. F. Hill, Manager of Production of the Union Oil Company of California stressed this point.

When reducing hole or piloting ahead with small tools, a good precaution is to center the new hole by rotating a diamond point bit for a short way or use a guided pilot bit for starting off.

Minor Factors

The most important of the minor factors in straight hole drilling is rate of rotation. In this connection it should be noted that in the Standard Oil Company's well Mascot No. 1, which at the present writing holds the world's record for the deepest hole ever drilled, indicating and recording tachometers were installed and the driller instructed as to the speeds of revolution to be maintained. These are reported to have been low, in most cases 60 R.P.M. or less in the lower portions of the hole.

Speed of Drilling

A highly important point having nothing to do with the mechanical equipment of the rig but fully as important as any of the equipment factors is the operator's attitude toward rate of drilling. Progress should be considered in feet per day or total drilling time for the completed well and not in feet per hour while drilling, as it has been found that wells in which attention is given to straightness of hole are frequently put on production long before other wells which show much greater progress in feet per hour drilled. That as good actual progress at depths of 4000 feet or greater is made with light weight and attention to straight hole as without this care, is shown by the attached composite progress curve for a group of wells drilled by a major oil company in Santa Fe Springs. (See Figure 2).

Conclusion

Finally, the human element in drilling is highly important. The driller must be given the best equipment and must be provided with every aid such as weight indicators, tachometers to determine the speed of the table and where possible a torque meter or some device to indicate the torque on the drill pipe. From that point on, results are up to the driller himself. If a hole is drilled vertical and straight, though it takes longer, the results will warrant the delay.

The Foreign Oil Legion

H. S. AUSTIN, who is directing the construction of the Iraq to Mediterranean pipeline, preliminary arrangements for which are now being carried out, is now in London prior to going to Iraq again.

▼

JOHN J. BROWN, chairman of the Foster Wheeler Corporation, recently returned to New York after a visit to Russia, where six Foster Wheeler refineries are being erected. The refineries will have an aggregate daily capacity of 50,000 bbl. of crude.

▼

E. N. HALFEN, drilling superintendent of the Société Française de Recherez has returned to the Mene Grande district of Venezuela to supervise the resumption of drilling. After reaching 6,000 feet, drilling on Zulod No. 1 had been suspended; but two tests of oil drilling sands at 2,700 and 3,200 feet are now being made.

▼

Fred'k J. Wolfe

FREDERICK J. WOLFE has been appointed managing-director of the Anglo-American Oil Company Ltd., London. Until recently Mr. Wolfe was vice-president in charge of marketing of the Imperial Oil Ltd., Toronto, Canada. He has taken up his new duties in England.

▼

CAPTAIN H. A. CUNNINGHAM, formerly commodore of the United States Lines and master of the Leviathan, has joined the general manager's staff of the Standard Shipping Co. which operates a large fleet of tankers transporting oil for the Standard Oil Company of New Jersey and its subsidiaries.

▼

MAJOR R. L. DUNSMORE has been transferred from the South American operations of the International Petroleum Company and is now in charge of the refinery at Imperoyal, Nova Scotia.

▼

Major R. L. Dunsmore

D. L. LETSÖ, for six years superintendent field engineer in connection with wildcatting operations in Albania of the D'Arcy Exploration Company Ltd. (Anglo-Persian Oil Company), has returned to Akasztó-Puszta, Hungary, the D'Arcy concern having abandoned all production operations in Albania. Dr. Letsö is a consulting petroleum engineer, and plans to representing American oil equipment manufacturers at Trieste, where he expects to open an office shortly.

▼

Francis E. Powell

FRANCIS E. POWELL, chairman of the Anglo-American Oil Co. of London, has, we understand, resigned his position with the oil company, having been appointed chairman of the International Sugar Council, which will have permanent offices at the Hague.

▼

H. R. H. Prince Edward of Wales and Prince George and R. V. LeSueur visiting the Talara oilfields of the International Petroleum Company in Peru.

King Carol of Roumania greets Minister of Industry Manoilescu, and Sir Henri Deterding

DR. K. WASHINGTON GREY of the Anglo-Persian Oil Company recently arrived in Persia from London.

▼

ALEC W. MCCOY, vice-president of the Maryland Refining Company, Panca City, Okla., recently returned from a visit to France and Italy, arriving in time for the A. S. P. G. convention at San Antonio where he read a paper.

▼

W. M. SEMPLE, one of the oil industry pioneers in Persia, has retired after 20 years' service with the Anglo-Persian Oil Company. In 1915-16 he was in charge of construction of part of the pipeline to Abadan. Since 1921 he has been transport superintendent.

▼

F. RICHARDS of the Caribbean Petroleum Company recently sailed from Maracaibo, Venezuela to his home in England. We understand that Mr. Richards will not return to Venezuela.

▼

HOYT SHERMAN, assistant general manager in Venezuela of the Venezuela Gulf Oil Company, recently won the cup presented by President Vincencio Pérez Soto of the State of Zulia, following fifteen races of the Maracaibo Yacht Club.

▼

WHEN members of the Foreign Oil Legion visit Venezuela they will find a fine new hotel at Maracay, which has just been opened, namely the Jardin, which has a frontage of three and a half city blocks, gardens, and swimming pool.

▼

MARTIN HESS has been appointed drilling superintendent for the British Controlled Oil Fields Ltd. at El Mene, Maracaibo.

▼

LIONEL C. BALL, B.E., A.I.E.A., has been appointed to the office of chief government geologist of Queensland. He assumes the position vacated by B. Dunstan who retired under the age limit regulation on January 31, after 33 years of service.

▼

SIDNEY H. KEOUGHAN, president North European Oil Company, New York, recently sailed for Germany on the EUROPA. Mr. Keoughan, who formerly was president of the Continental Oil Company, believes that large quantities of crude oil will be produced in Germany before long.

▼

ARTHUR IDDINGS is the new general manager at Talara, Peru, of the producing and refining operations of the International Petroleum Co., Ltd., not of the Tropical Oil Company as reported in the March issue of WORLD PETROLEUM. The latter concern is a subsidiary.

▼

E. P. HINDES has recently been appointed chief geologist of Henry L. Doherty and Company, New York, and as such will be the executive head of the Geological and Land Departments, with direct supervision over all business pertaining to oil and gas geological and land activities which may be handled from New York.

E. P. Hines

▼

L. W. KORTHALS, chief engineer of the Caribbean Petroleum Company, Maracaibo, Venezuela, who formerly was a lieutenant in the Netherlands navy, was married on March 27, to Beatrice Moir of the C. P. C.

▼

H. T. MAYO, chief geologist in Persia of the Anglo-Persian Oil Company, who played a leading part in proving the new Haft Kel oil field has retired after seven years service in Persia.

▼

CARL BRAUN and V. V. Jacomini, president and British representative, of C. F. Braun & Company, Inc., Alhambra, Calif., arrived in New York on the S. S. MAURETANIA, April 3. Mr. Braun completed a short trip to Europe, but Mr. Jacomini returns after over a year spent abroad.

▼

E. A. WETMORE, comptroller of the Venezuela Gulf Oil Company was a recent visitor to Maracaibo, and arrived back in New York on April 20, following a visit to the company's Paraguaná terminal which he made aboard a Gulf tanker.

▼

OSAMU KASHARA, an engineer of the Ogura Oil Company, Tokyo-Fu, Japan, has returned to Japan after visiting some of the oilfields and refineries of the United States, as well as those of Russia and Roumania en route.

▼

F. F. GODBER, one of the managing-directors of the Royal Dutch-Shell group recently arrived in the United States on business.

▼

PRINCE DARAB MIRZA KADJAR of Persia is in the oilfields of Texas gaining a first-hand knowledge of American methods of drilling and production. The oilfields of Persia form the country's largest sources of income; but they are being operated in a more conservative manner than most fields in the United States.

(Co. Acme)
Prince Darab Mirza Kadjar of Persia

U. S. Production Review

	Daily Production bbl.	Daily Runs To Stills bbl.	Gasoline Stocks bbl.	IMPORTS Total bbl.	IMPORTS Gasoline %
Week Ending March 7....	2,156,700 89,343**	2,172,100	45,789,000	219,857	19.1
Week Ending March 14....	2,177,972 118,822**	2,314,400	45,821,000	227,714	20.0
Week Ending March 21....	2,263,938 139,296**	2,297,000	46,758,000	278,000	12.5
Week Ending March 28....	2,269,539 165,749**	2,332,400	47,444,000	190,000	18.2
Week Ending April 4.....	2,243,010 190,720**	2,231,900	46,076,000***	312,428	15.0
Week Ending April 11.....	2,298,652 242,808**	2,371,200	46,757,000***	196,714	24.8
Week Ending April 18.....	2,422,000 300,050**	2,434,143	46,384,000	217,429	16.8

Underlined figures indicate improvement in statistical position—decrease in production, runs to stills, gasoline stocks or imports.

** Production of East Central Texas—Rusk & Gregg Counties, the Van Pool, and few old fields. Rusk & Gregg accounting for all but 45,000 bbl.

*** Not comparable with previous weeks nor a year ago, due to deduction in California figures of natural gasoline stocks at refineries and gasoline outside of continental United States which have been included in previous figures.

Crude Oil Prices

THE continued increase of production in the east Texas fields and the inability, as yet, to enforce proration in that area, have caused the crude oil prices of Rusk-Gregg field to decline to a point where the average selling price is under 25 cents per barrel at the well, while the range is from 15 cents to 67 cents. Magnolia Petroleum Company (Std. Oil N. Y.) is the only purchaser in the field paying the posted Mid-Continent prices ranging from 40 to 67 cents, according to gravity, but this affects only a negligible amount of crude oil, while the Panola Pipe Line Company, the Petroleum Marketing Company (Warner-Quinlan) and the Moody-Seagraves have a flat posted price of 25 cents per barrel, and the Gulf Coast Pipe Line Company is paying 10 cents per barrel at the well. East Texas crude is of high gravity testing around 40° Bé.

The prices in Kansas, Oklahoma and north central Texas fields are maintained by major oil purchasers (top 67c for 40° Bé), with the exception of some undercutting by minor refiners in north central Texas.

In the Texas Panhandle crude oil is selling at from 43 to 55 cents per barrel.

On the Gulf Coast a price of from 80 to 93 cents per barrel is prevailing, while in southwest Texas and southeastern New Mexico the heavier oils bring 40 cents flat per barerl.

In California the "flood" of high gravity oil caused the prices to be radically changed, the light gravity crudes, above 29° Bé, bringing 35 cents flat per barrel in all fields, while heavy crudes are scaled up to 65 cents per barrel for 14° Bé. The California crude oil price structure reflects the drastic reduction in gasoline prices on the Pacific Coast, while at the same time the fuel oil quotations remained fairly steady.

In general the crude oil price situation cannot be considered as stabilized. The high gravity crude oil in Mid-Continent fields, for an example, commands an average price of 61 cents per barrel for about 700,000 bbl. of daily production in Oklahoma, Kansas and north Texas, while about 250,000 bbl. daily are sold at an average price of under 25 cents per barrel in east and north Texas fields. Any unfavorable development in east Texas, or the success of proration movement there, will serve to stabilize the markets at higher levels, while if the present 'flood" conditions prevail it is but a matter of time until prices will again be readjusted downward.

Texas Proration

THE Texas Railroad Commission issued an order for proration in that State fixing the total production at 691,981 bbl. per day. The Rusk-Gregg field of east Texas was assigned a production of 90,000 bbl. per day in the period of April 10th to May 1st, gradually increasing to 130,000 bbl. per day by June 15th. An injunction against enforcement of this order was immediately obtained by Carl Estes, a producer, whose attorney is Dan Moody, former Governor of Texas. Though the injunction was originally interpreted to apply to all producers, the State Assistant Attorney General F. Upchurch construed the proration injunction as applying only to Estes, and affecting accordingly only 72 acres. The commission at this time is preparing to enforce the order, possibly using the Common Purchaser, or pipeline, law, enacted by Texas legislature in 1930, providing for ratable takings by all the carriers. Some of the smaller producers are equally as determined to produce their wells and sell all the oil, and because of the large number of small leases and minor operators the proration rulings may be enforcable only by some equivalent of the martial law.

East Texas:—Rusk-Gregg

THE development of the east Texas field continued to gain momentum until at this time there are 150 producing wells and 400 active operations, or a total of 550 wells. The daily production reached 200,000 bbl. The drilling has been speeded up, and at this time as little as 90 hours is required for drilling to 3,600 feet after setting the surface casing, and accordingly the new completions average in excess of 50 per week. The latest developments in Rusk-Gregg field are:—

1. The defining of producing area on the north by the deArmand No. 1 Cobb (4 miles north from the Longview Sector), which encountered salt water at 3,791 feet.
2. The defining of producing area on the northeast by M. Hammond No. 1 Hamby (3½ miles northeast from the Longview Sector), which missed the producing horizon entirely.
3. The widening of the producing area on the north end by the Selby Oil Co. No. 1 Snavely (5 miles west from the east limit of the Longview Sector), which was completed for 17,000 bbl. per day at 3,585 feet.
4. The widening of the producing area on the south end by the G. Lewis No. 1 Cooke (5 miles west from the east limit of the Joiner Sector), which was completed for 20,000 bbl. per day at 3,705 feet, and which extended the production into the Smith County.
5. Showing of large quantities of salt water in the Central Kilgore Sector

in two wells which were originally rated in excess of 15,000 bbl. each. The Burton Drilling Co. No. 1 Florey is making 64 per cent salt water, while Magnolia (Std. Oil N. Y.) No. 1 Florey is cutting 95 per cent salt water, both wells being chocked. These wells are but 2½ miles west from the east limit of the Kilgore sector and they indicate the extreme danger of salt water encroachment; the two wells started cutting and went to indicated percentage of water in the course of 48 hours. It is hardly to be doubted that if the proration will not be enforced and if the wells will be allowed to flow open the overproduction problem will be solved automatically by the whole western side of the Rusk-Gregg field being flooded by salt water within very short time. The experience of other fields would indicate that regardless of any proration question, as such, the large wells should be pinched in to but 5 per cent of their potential to insure gradual encroachment of the water table, this being especially true of the Rusk-Gregg area where the gas pressure is subnormal. It is becoming more and more apparent that even at 25 cents per barrel of crude oil the large majority of small producers will loose their investment, because even to return the drilling expenses 120,000 bbl. per well must be produced, or with current contracts at 19 cents per barrel—150,000 bbl. . . .

6. Introduction of gas-lift and pumping in wells that stopped flowing. Both methods proved very successful from the engineering point of view, but uneconomical when the crude is selling at under 25 cents per barrel, since the lifting costs are between 20 and 30 cents per barrel.
7. Active new pipeline building campaign, including the Sinclair Texas Pipe Line Co. (100 miles of 12", a connecting link to Mexico, Texas, hence via Prairie Pipe Line Co. trunk lines both north and south); Texas Oil Co. (to Corsicana, Texas, hence via its own line to Gulf Coast); Arkansas Pipe Line Co. (8" line to Shreveport); Gulf Oil Co. (to its trunk line connecting with the Gulf Coast) and the Atlas Pipe Line Co. (157 miles to its Jewella refinery). It is indicated that the total outlet from the East Texas area will reach shortly 450,000 bbl.
8. The new locations continue undiminished, averaging above 50 per week, indicating that by July 1st the Rusk-Gregg field may boast 1,000 wells—this in a field which will be only 6 months old at that time. The rate of development, however, may be delayed somewhat by the showing of salt water; and will depend upon the speed of encroachment.

(Continued on the next page)

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World Oil Production Figures—Official

All figures furnished direct to World Petroleum by Governments, except where otherwise specified

Country	Total Production (revised) 1930 Barrels	JANUARY Barrels	FEBRUARY Barrels	MARCH Barrels
UNITED STATES	896,265,000	65,991,000	60,645,000	(7) 69,000,000
VENEZUELA	141,652,832	10,579,707	9,806,034	10,705,814
RUSSIA & SAKHALIN	129,955,417	12,072,900	11,141,900	12,654,600
PERSIA	(6) 43,549,323	(6) 3,201,156	(6) 3,079,132	(6) 3,081,260
ROUMANIA	39,876,589	4,233,810	3,570,000	3,856,020
MEXICO	39,529,639	2,890,903	2,563,986	2,815,719
DUTCH EAST INDIES	38,722,250	(5) 3,226,854	(5) 3,225,000	(5) 3,200,000
COLOMBIA	20,343,176	1,657,694	1,565,425	1,774,865
PERU	12,445,888	986,902	662,022	(4) 1,125,000
TRINIDAD	9,419,804	821,523	744,518	844,534
ARGENTINA	9,001,671	(5) 780,000	(5) 740,000	(5) 740,000
INDIA (BRITISH)	6,936,315	(5) 583,333	(5) 580,000	(5) 580,000
SARAWAK	5,251,541	(1) 326,956	231,090	(3) 314,937
POLAND	4,645,550	390,600	350,700	381,500
JAPAN & TAIWAN	(5) 2,250,000	(5) 197,500	(5) 195,000	(5) 195,000
EGYPT	1,977,660	(1) 196,021	158,210	162,225
ECUADOR	1,596,238	137,531	120,145	126,544
CANADA	1,535,827	179,711	155,651	160,358
GERMANY	1,209,185	127,894	98,000	100,030
IRAQ	(8) 980,000	(5) 100,000	(5) 100,000	(5) 100,000
FRANCE	516,642	(2) 40,075	(2) 40,075	(2) 40,075
CZECHO-SLOVAKIA and Others	(5) 220,000	(5) 25,900	(5) 25,900	(5) 25,900
TOTALS	1,406,880,547	108,711,970	96,797,788	111,984,381

[1] 4 weeks to Feb. 6th.
[2] Our French Correspondent.
[3] 4 weeks to April 17th.
[4] International Petroleum Co. production was 932,480 bbls.
[5] Estimates.
[6] Anglo-Persian Company's figures.
[7] American Petroleum Institute estimate.
[8] Actual production in Iraq probably higher than official total.

9. The total recovery from Rusk-Gregg field reached 6,000,000 bbl. by April 15th, indicating a gross return of $1,500,000. Direct well investment at this time is in the neighborhood of $16,500,000, while the total investment to-date in wells, dry holes, leases, pipelines, buildings, roads, loading racks and all other auxiliary construction is probably around $30,000,000.
10. The very active wildcatting campaign around the Rusk-Gregg field and including the Upshur, Marion, Harrison, Nagodoches, Cass and Cherokee counties has not yielded any favorable results so far, and the current indications are that the Rusk-Gregg field is an isolated oil accumulation.

Texas—Big Lake

CONTINENTAL OIL CO. (Texon) completed its No. 2-B University for the largest well in the field estimated good for 12,000 bbl. of 60°Be oil, accompanied by 173,000,000 c.f. of gas, from 8,667 feet. This well has been entirely shut-in pending the improvement in the crude oil situation somewhere in the future.

New Mexico—Hobbs

THE allowable of the field has been increased by 4,000 bbl., to 36,532 bbl. per day, the oil selling currently at 40 cents per barrel. The potential of the field is in excess of 1,100,000 bbl.

Oklahoma—Oklahoma City

THE State Corporation Commission is taking four-hour quarterly potentials of the field for proration allowances. As compared with the January, 1931, tests, the field is holding up remarkably well. The 411 wells tested to-date indicate a potential of 4,979,220 bbl./day, as compared with 5,171,789 bbl./day in January. The total recovery of the field reached 55,000,000 bbl. from 756 wells. The field activity is at its minimum, but 40 wells being drilled at this time.

California—Kettleman Hills

ON April 1st the Kettleman North Dome Association took over 11,000 acres in the Kettleman Hills field, inaugurating the unit operation plan.

BASIL B. ZAVOICO.

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U. S. SOVIET RUSSIA PRODUCTION REVIEW

First Quarter, 1931

THIS month WORLD PETROLEUM makes first publication of a summary of crude production, refining, and drilling activities in Russia for the first quarter of 1931.

Summary of U. S. S. R. Activities First Quarter 1931

	Crude Production (Barrels)	Runs to stills (Barrels)	Drilled (Feet)
January	12,072,900	10,399,200	138,458
February	11,141,900	9,514,400	147,935
March	12,654,600	11,197,200	226,439
TOTAL	35,869,400	31,110,800	512,832

The quotas in accordance with the plan for the year are as follows:

	Crude Production (Barrels)	Runs to stills (Barrels)	Drilling (Feet)
Year	192,500,000	173,000,000	3,073,950
Quarter	48,125,000	43,250,000	768,486

Plan Revisions

SEVERAL revisions have been made during the last six months in the Five Year Plan for the oil industry, which have naturally resulted in changes of the quotas for 1931. The final crude oil production quota for 1931 calls for an increase of 36 per cent over last year. The actual increase, however, will be much greater as the quantity of crude to be produced during 1931 has been set at 192,500,000 bbl. According to the original Five Year Plan this quota had to be reached by 1933 which is the last year of the plan. Thus the Soviet oil industry will have completed its Five Year Plan in three years. The revised figures for the year 1933 are 330,000,000 bbl.

According to the Plan the total will be derived from the individual oil trusts as given in the table for 1931.

Production Quotas of Soviet Oil Trusts, 1931.

	Quantity (Barrels)	Per Cent of Total
Azneft	105,000,000	56.0
Grozneft	69,000,000	35.0
Maikop	10,500,000	5.3
Embaneft	4,500,000	2.1
Sakhalin	1,820,000	0.8
Middlessia	1,260,000	0.6
All other fields	420,000	0.2
TOTAL	192,500,000	100.0

The larger part of crude production for 1931 is still to be supplied by the two main oil trusts: Azneft and Grozneft. It is to be noted, however, that the smaller fields are beginning to gain significance. Their share of production this year will amount to nine per cent against five per cent last year. Reports of the Azneft and Grozneft show that outside of the areas of Kara Chukur and Benoe no new discoveries have been made recently. The old fields of both oil trusts have yielded prolific new oil horizons at greater depths. Only Sakhalin and Middle Asia, of the other fields, show an appreciable increase in production due to increased drilling activity.

While Sakhalin crude is of much lower quality than the crude from the Caucasian fields, its development is of definite value. It is expected to serve the Far Eastern markets and to find an outlet to the Pacific ocean.

Of the other fields, Ural as yet is making little headway. This is probably due to drilling conditions not being favorable in that region. Again, the actual potentialities of the field may have been exaggerated from the beginning.

Production of gas has been set at an increase of 65 per cent over last year. Azneft is expected to produce just under 50 percent of the total; Grozneft comes next with an estimated production of 36 per cent; Maikop about 12 per cent. The remaining two per cent will be supplied by other fields.

Runs to Stills

RATIO of runs to stills to total production has been set at 90 per cent, and will amount to 173,000,000 bbl. The ratio of Azneft runs to stills will be about 92 per cent. Probably more than half of the heavy oil produced will be run to stills. In Grozni and Maikop the entire production will be run to stills. It is expected that 75 per cent of Maikop production will have to be carried to Touapse owing to the fact that Krasnodar refinery will be unable to take care of the entire Maikop production.

According to a report on Azneft and Grozneft, the present refining capacity of both oil trusts is capable of taking care

of only 75 to 80 per cent of the planned production of crude in 1931, because a number of plants now under construction will not be on steam for some time. Information at hand shows that further delays in completion and operation are to be expected with the Foster Wheeler plants at Batoum, the Badger units and pipe stills for deep fractionation at Grozni, and all reconstruction of existing plants of both oil trusts. Delay is expected in the completion of the lubricating plants of the Azneft, and they may not be ready for operation until 1932. The plans called for lubricating capacity of 16,000,000 bbl.; but the actual capacity under operation in 1931 will amount to only 12,000,000 bbl. and the balance of 4,000,000 bbl. depends entirely on the completion of the six new plants which are being erected at present. There is, however, no assurance that these plants will be completed in 1931.

Cracking

THE number of cracking units in operation at the beginning of the year consisted of two Vickers units, three Jenkins units, and two Winkler-Koch units for the Azneft, as well as four Winkler-Koch units for the Grozneft. These, together with a cracking unit of domestic construction, make 12 units. Azneft and Grozneft expect that eight more cracking units will come under steam during 1931; also one will go into operation at Konstantinovka. Thus, at the end of the year the total cracking capacity will amount to 17,000,000 bbl. This, however, also depends entirely on the completion of plants now being erected.

Refinery figures have been set in three variants, namely, as planned, as required, and as expected. This is probably due to delays to be expected in the completion of refinery capacity. The refinery run outlook table shows the three variants in barrels. Quantities include requirements for home consumption and export.

Refinery Run Outlook

	Planned (Barrels)	Required (Barrels)	Expected (Barrels)
Gasoline	20,000,000	17,500,000	16,500,000
Kerosine—Ligroin	35,000,000	36,000,000	32,000,000
Lubric. oil	7,000,000	8,000,000	6,000,000
Diesel and gas oil	15,000,000	14,000,000	12,500,000
Fuel oil, etc.	70,000,000	68,000,000	65,000,000

Excess gasoline shown in table is intended to cover the shortage of kerosene fuel for use in tractors. It is expected that this fuel will be required at the rate of 40 per cent of the total kerosene requirements.

A shortage may be expected in some grades of lubricating oil for home consumption due to lack of refining capacity. The general increase in demand both for home consumption and export may reach about 50 per cent over that year's figure and it is, therefore, unlikely that any appreciable stocks will be accumulated.

Capital Investment for 1931

THE total expenditures of the oil industry during 1931 has been set at 330,000,000 rbls. to be distributed as follows:

Oil Industry Expenditure Plans

	Roubles
Production and drilling	63,000,000
Exploration and wildcatting	40,000,000
Geological and scientific research	6,300,000
Drilling equipment	41,300,000
Production & utilization of gas	4,900,000
Erection of plants	91,900,000
Pipelines and storage	19,600,000
Electrification and power plants	17,300,000
Transportation facilities	7,800,000
Repair shops and auxilliaries	16,000,000
Personell training	2,600,000
Safety devices, fire prevention	3,300,000
Housing and cultural buildings	16,000,000
TOTAL	330,000,000

The amount will be distributed among the individual oil trusts as follows: Azneft, 135,200,000 rbls.; Grozneft, 45,500,000; Maikop, 26,800,000; Embaneft, 9,300,000; Sakhalin, 12,800,000; Middle Asia, 10,500,000; Ural, 9,900,000; Gruzneft, 4,600,000; Turkmanneft, 8,700,000; plants in the interior, 37,300,000; sales organization, 20,100,000; and, all other purposes, 9,300,000 rbls.

In accordance with the plans Azneft will spend 4,700,000 rbls. for the completion of two lubricating plants and two kerosene stills; 7,000,000 rbls. for the construction of two kerosene plants and four lubricating units to be completed in 1932; 5,000,000 rbls. for the completion of two cracking units in 1931, and 800,000 rbls. for four cracking units to be completed in 1932. The total of Azneft expenditures for the construction and erection of plants calls for 46,400,000 rbls. of which 20,000,000 rbls. will be spent abroad. The Grozneft will spend 5,700,000 rbls. for completion in 1931 of the Badger stills and the stills for deep fractionation, as well as for four cracking units and 4,600,000 rbls. for erections to be completed in 1932. The total for Grozneft is 21,900,000 rbls. of which approximately 9,000,000 be spent abroad.

Maikop will spend approximately 10,000,000 rbls. of which about 7,500,000 are to be spent abroad. The cracking and pipe still for Sakhalinneft. as well as the pipe still for Middle Asianeft, will be ordered abroad.

Over and above the plans, an additional 20,000,000 rbls. will be spent for the erection of new bright stock plants and refining units at Baku, Grozni, Armavir, Krasnodar, etc. It is also planned to erect an additional cracking unit at Chabarovsk.

Small lines in the fields of Maikop, Sakhalin, and Middle Asianeft are mentioned under pipeline work to be done in 1931 for the Five Year Oil Plan.

The drilling cost at Azneft is expected to be reduced from 136 rbls. per meter last year to 110 rbls. this year. At Grozneft the reduction per meter is expected to amount to 19 rbls.; from 112 rbls. to 93 rbls. per meter. At the same time drilling speed will be increased from 102 meters per rig, per month last year to 160-170 meters per rig, per month this year. Cost of production will be brought down to about 15 cents per barrel of oil and cost of refining to about 22 cents per barrel of crude.

J. WEGRIN.

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Iraq Petroleum Situation

LITTLE of importance has developed on the matter of the Iraq-to-the-Mediterranean pipeline, since the signing of the contract by Sir John Cadman, chairman of the Iraq Petroleum Company, and the Iraq Government. The pipeline will be bifurcated from the oil fields to Heifa and Tripoli as first hinted by, and afterwards confirmed in, WORLD PETROLEUM. It will be recalled that H. S. Austin, who will direct the construction of the line, recently returned to the United States following a visi to Iraq. Mr. Austin, however, at the time of writing is in London making the initial arrangements and will shortly proceed to Iraq. The preliminary details and final surveys will require at least four or five months before equipment can be ordered and actual construction work commenced.

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America's International Trade

INTERNATIONAL trade at present is a greater factor in the annual business of the United States than ever before, says O. K. Davis, secretary of the National Foreign Trade Council. Volume of exports has fallen off by only 15 percent whereas domestic manufactured production has diminished by more than 25 percent. As a result America's overseas sales now represent 12 percent of production, compared with about 8 percent average for the previous three years.

FINANCE

London

THE London oil share market has acquired a strong "inferiority complex." Most leading shares have touched fresh low records for many years during the past month, and show very little recovery from the worst. Any support given has consisted of bear closing and spacmodic buying of international shares by Continental operators, and as the European demand has now dried up, and the short interest has been greatly reduced, dealers are wondering how even current levels can be maintained for any length of time.

Reasons for quiet business and lower prices are not difficult to find. The principal adverse factor has been a growing realization that the petroleum price structure in the United States is less secure than was hoped on this side a few months ago. Increasing American production, with continued reports of cuts in crude and petrol prices, has created an unfavorable impression, which has only been accentuated by official steps to work out a unified programme for preventing further price demoralization. The support given to United States measures for limiting petroleum imports has been another "bear point," since a movement in this direction might react unfavorably on certain British undertakings. Weak prices in the States have produced a crop of rumours that a further petrol price cut by leading distributors in this country is in prospect. In view of the imminence of the Budget, a price reduction in the immediate future is not considered likely, since it might tempt the Chancellor to increase the petrol tax. The rumours, however, have contributed to current pessimism and inactivity, which obviously leave the market vulnerable to fresh bear attacks at any time.

ALTHOUGH attention has been concentrated largely on the unsatisfactory statistical position in the United States, it may be doubted whether the world outlook is any better. Selling prices in most markets are, after all, being maintained at something near a reasonable level only by arrangements between distributors. From many points of view, such control is defensible, but it constitutes, a limitation of the operation of economic laws, and therefore leaves the industry in a weak position when outside competition develops. This aspect of the matter has been brought home to the market by recent reports that Soviet oil interests were greatly increasing their hold of the South African market, and at the same time were negotiating with the Chinese Kwangwha Petroleum Company for placing kerosene and petrol on the Chinese market at prices which would seriously undercut those now ruling. The Royal Dutch-Shell, Texas, Vacuum, and Standard Oil groups, which now cater largely to Chinese demands, can be relied upon to look after themselves as far as possible. Nevertheless, the reports from the Chinese market were held partly responsible for recent pronounced weakness of the shares of Shell, Royal Dutch, and some of their associated companies. The actual position was fully covered in last month's WORLD PETROLEUM.

SLACK business has left the market with plenty of time for making guesses at the final dividends of leadings oil companies for 1930. The Shell dividend, generally published about the middle of May, is expected by most operators to be 7½ per cent tax free, making 17½ per cent net for the whole year, against 25 per cent net for 1929. Royal Dutch, the senior member of the combine, declares its dividend at about the same time, and the market looks for a final of 7½ per cent, bringing the total distribution to 17½ per cent, or 6½ per cent less than for the previous year. On the basis of suggested distributions, Shells at their current prices of 2 25/32 would yield over 7 per cent free from tax, and Royal Dutch, at 20 over 8 per cent. From this standpoint the suggested reductions in dividends look reasonable enough, but some forecasts put the finals at under 7½ per cent in each case.

A MORE optimistic impression prevails regarding the forthcoming dividend on Burmah, many dealers anticipating maintenance of the total dividend for 1930 at 30 per cent by a repetition of the 20 per cent final announced last May. This looks too high an estimate in view of the price of the shares, which, at 2 31/32, would offer a return of over 10 per cent if the dividend were maintained. The exceptional financial strength of the company, however, would doubtless enable the directors to provide the same return to shareholders as before, despite a reduction in profits. The one important case in which a

London Stock Exchange Prices

1931 High	1931 Low	Last Year's Div. % per Ann.	Share	March 7 to April 23 First	High	Low	Last	Change
9/16	11/32	3½	Anglo-Ecuadonian	15/32	15/32	13/32	13/32	— 1/16
2¾	1 13/16	22½	Anglo-Egyptian "B"	2¼	2¼	2⅛	2 1/32	— 1/16
2 13/16	1⅝	20	Anglo-Persian	2 5/16	2 11/32	1 31/32	1 31/32	— 1
⅝	15/32	25	Apex Trinidad (5s.)	17/32	17/32	½	½	— 1/32
21/32	23/32	....	Attock	25/32	25/32	23/32	¾	— 1/32
5/16	7/32	5	Brit. Borneo (10s.)	5/16	5/16	5/16	5/16	.....
7/32	3/16	6¾	Brit. Burmah (8s.)	3/16	3/16	3/16	3/16	.....
5/32†	3/16†	....	Brit. Controlled ($5.)	5/32†	5/32†	3/16†	3/16†	— 1/16
¼†	5/32†	....	Brit. Controlled Pfd. ($5.)	¼†	¼†	5/32†	1/32†	— 3/32
3⅝	2 25/32	30	Burmah	3 1/32	3 11/32	2 25/32	2 29/32	— 17/32
15/32	⅜	12c.	Canadian Eagle (no par)	7/32	15/32	⅝	⅝	— 1/32
11/16	21/32	....	Creole Petroleum (no par)	21/32	21/32	19/32	19/32	— 7/32
1/32	3/32	....	Kern River (10s.)	1/16	1/16	1/16	1/16	.....
1¼	1	12½	Lobitos	1¼	1 9/32	1	1	— ¼
17/32	⅜	6	Mexican Eagle ($4. Mex.)	15/32	½	⅜	⅜	— 3/32
36½	32½	....	Pan American "B" ($50.)	33½	34	32½	33	— ½
5/16	9/32	5	Phoenix	9/32	11/32	9/32	9/32	.....
25 5/16	20	24	Royal Dutch (Fl. 100)	24⅜	24⅝	20	20	— 4⅜
3 27/32	2 25/32	‡25	Shell Transport	3 7/32	3 7/32	2 25/32	2 25/32	— 21/32
9/32	3/16	4	Steaua Romana	7/32	7/32	3/16	3/16	— 1/32
1 15/32	1	7½	Trinidad Leasehold	1⅛	1 3/32	1	1	— 1/16
9/32	7/32	....	Untd. Brit. of Trinidad (6s.8d.)	9/32	9/32	7/32	7/32	— 1/32
1 25/32	1 7/16	20	Venezuelan Oil Concessions	1⅝	1 25/32	1 7/16	1 7/16	— 3/16

Nominal value of shares £1 unless otherwise indicated by bracketed figures. ‡ Denotes tax-free dividend. † Denotes new shares, subsequent to capital reduction. c. Denotes cents per share.

higher dividend is expected for 1930 is that of Canadian Eagle, which paid 12 cents for 1929. Estimates of last year's dividend range as high at 24 cents. It is believed that the effect of the Mexican Eagle segregation plan, which brought Canadian Eagle into existence, will be more beneficial to the latter in 1930 than in the first years of the company's career.

SIR JOHN CADMAN, chairman of the Anglo-Persian Oil Company and Iraq Petroleum Company, has returned to London, but refused to say anthing definite regarding the result of his Eastern tour in relation to Iraq affairs. It is known that during his visit to Iraq he carried on negotiations with various parties relating to a pipeline to the Mediterranean, and that an agreement was signed while he was on the spot. Various reports from the East and from Paris as to the nature of the agreement have now been confirmed by an official statement in the British Parliament. In reply to a question, the Under Secretary of State for the Colonies said he understood an agreement had actually been signed between the Iraq Petroleum Company and the Iraqi Government providing for construction of two pipe line systems from a point of bifurcation in Iraq, one terminating in the Bay of Acre, near Haifa, Palestine, and the other in the vicinity of Tripoli. As the pipe line will take several years to construct, the news has no immediate bearing on the share market, or on the present distribution of petroleum products.

Accounts of British Controlled Oilfields, Ltd. for 17 months to the end of December last show production profits equal to $2,789,900 per annum, against $2,696,032 for the year to July 31, 1929. After providing for expenses and writing down properties, the company is left with a net profit equal to $584,000 per annum, or less than half the figure for the previous twelve months. There is no dividend on either class of capital, and the market was left wondering if, even now that the capital has been reduced, the undertaking is on a sound basis. Uncertainty on this point was responsible for a fresh marking down of the shares.

ALEC. H. DAY

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Paris

CONSTANT rumours of ever increasing overproduction in the States continue to have a depressing effect upon the French oil share market. The Bourse has not yet rallied to the influence of the ratified Agreements between the State and the C. F. P., neither has the publication of the licences to import crude oil into France had any marked effect upon the trend of events. These two factors should normally have bolstered up many weakening shares.

News from abroad, however, is not entirely responsible for the listless outlook here. The menace of increased budgetary expenditure, and the long discussions which preceded the actual vote of the budget proved a serious obstacle to buying or selling on any important scale during March; and, as has been the case during the past few months all the shares quoted on the accompanying table have lost several more points, with the exception of the Steaua Française which had the distinction of gaining a little ground.

IT was rumoured during the course of the month that the Government was contemplating re-establishing a tax on all transactions handled at the Bourse. This caused some indignation in fiancial circles, for it would hardly have been possible to choose a worse moment for such an innovation. Business was stagnant enough without further taxation to act as a drag upon such activity as might have been possible. This seems to have been appreciated in political circles for latterly nothing more has been said about the matter. The difficulties which have occurred lately during the course of negotiations for the Naval Agreement have caused a certain amount of uneasiness here, as also has the proposed Austro-German Customs Union.

A further tax of Frs. 2.—per hectoliter was voted by the Chamber of Deputies and is to be added to the already existing tax of Frs. 10.—an hectoliter paid by gasoline for the maintainance of roads in France. It is generally believed that now this tax has been adopted, the one of Frs. 32— per hectoliter proposed by Mr. Malingre which was to take the place of those paid by motor cars, will no longer be taken into consideration.

VERY few of the larger French oil companies have yet published their industrial or financial results for 1930. The S. A. E. M. Pechelbronn is one of the rare exceptions and announces a dividend of 10 per cent or Frs. 50.— The companies profits for 1930 have amounted to Frs. 28,800,000—which compares favourable with those of 1928 and 1929 which attained Frs. 27,288,-000.—and 28,165,000 respectively. Quantities of crude oil extracted have also increased, the total tonnage obtained being 73,806 tons as compared with 71,-662 in 1929.

The board of Directors of the S.A. E. M. Pechelbronn has not yet rendered its decision public with regard to the sums which are to be put aside for amortizement, etc., but it is generally believed that they will be very similar to those put aside last year.

Every year Pechelbronn has added to its refinery output; the results obtained during the last four years are as follows:

Barrels	Year
553,000	1927
622,300	1928
674,800	1929
763,000	1930

Paris Bourse Prices

1931 Div.	1931 Par	Share	March 1 to April 16 First	High	Low	Last	Change
50 Lei	500 Lei	Astra Romana	125	131	95	95	— 30
.....	500 Lei	Colombia	99	100	85	85	— 14
50 Lei	500 Lei	Concordia	84	87	75	75	— 9
.....	500 Fr.	Cdré. Gen. des Pétroles act.	....	....	....	....	.....
.....	.....	Cdré. Gen. des Pétroles parts.	....	1925	1775	....	.....
.....	500 Fr.	Franco Pol. Pétroles act.	....	94	67	67	.....
.....	.....	Franco Pol Pétroles parts.	....	....	....	....	.....
1 $	10 $	Franco Wyoming	391	391	292	292	— 99
20 Fr.	500 Fr.	S.G.des Huiles de Pétroles act.	402	415	395	395	— 7
.....	.....	" " parts	139	139	133	134	— 5
.....	500 Fr.	C. Française des Pétroles	....	619	590	....	.....
50 Fr.	500 Fr.	C. Industrielle des Pétroles	880	905	830	830	— 50
65 Fr.	500 Fr.	Lille Bonnières Colombes pr.	1005	1009	945	945	— 60
40 Fr.	500 Fr.	" " ord.	670	676	623	633	— 37
.....	500 Fr.	Malopolska act.	68	71	47	47	— 21
.....	.....	Malopolska parts	430	430	211	211	— 219
.....	.....	Mexican Eagle	....	65	52	52	.....
17.50 Fr.	250 Fr.	Omnium Inter. des Pétroles	136	149	130	130	— 6
50 Fr.	500 Fr.	Péchelbronn	819	819	700	700	— 119
60 F.B.	500 F.B.	Pétrofina	590	590	550	550	— 40
240 Fl.	1000 Fl.	Royal Dutch	30075	30250	26650	26650	—3425
24 Fl.	100 Fl.	Royal Dutch	3030	3060	2690	2690	— 340
5 sh.	1 £	Shell	422	433	390	390	— 32
25 Fr.	500 Fr.	Steaua Française	198	212	185	193	— 5

It is probable that this year the company will have to increase its refinery capacity still further as its license to import crude petroleum is put at 763,500 bbl. for the four most important refined products. This, in all probability, will not include the oil extracted from national soil.

AMONGST the smaller companies which have published results for 1930 we find the S. Française des Carburants with a net profit of Frs. 3,672,064. 1929 profits were slightly higher, namely, Frs. 3,753,110; but in view of general adverse conditions the shareholders of the company have nothing much to complain about. A dividend of Frs. 50.— has been proposed, which works out at 8.2 per cent.

The S. Française des Carburants was founded in 1912 with the object of supplying the three different taxi-cab companies which had formed it, with gasoline and lubricants. Since then its business has expanded, and the company is now a properly organized distributing agency.

THE Roumanian S. A. Concordia is to distribute a dividend of Lei 30 or 12 per cent as compared with 20 per cent last year. The company has in the meantime absorbed the S. Vega and Sirius and in order to do this was obliged to increase its capital from Lei 500 million to Lei 650 million. Production since then has increased, and amounted to 597,324 bbl. in January as against 563,780 in December. 106,616 feet were drilled in 1930 as against 100,098 feet in 1929. Concordia's refineries are working full time, and were it not for the extremely low prices at which Roumanian petroleum products are selling, the company's position would be most satisfactory.

E. J. ANDRE

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New York

WITH only minor exceptions, oil stocks made new lows for the 1929-31 bear market in the period covered by this month's tabulation. In fact, most divisions of the list reacted substantially with rails, steels and chemicals (in addition to oils) displaying the most pronounced weakness. Prices of both crude and refined have declined further due to influence of the flush production from east Texas and of rather excessive gasoline stocks. East Texas output, a high gasoline yielding crude, is coming into the market at the rate of over 190,000 bbl. daily and is being sold for as low as 20 cents a barrel, or even less. It can be delivered to East Coast refineries cheaper than South American crude, which is no where near its equal in gasoline yield, and as long as this situation prevails the large importers of Venezuelan crude have nothing to lose in a partial substitution of this new supply for their Venezuelan output, except, possibly in the matter of fuel oil. In California, the similar novel situation prevails with high gravity Kettleman Hills crude, which is condensed gas or almost pure gasoline, selling for less than the low gravity crude that is chiefly converted into fuel oil.

The spring peak in gasoline stocks of about 48,000,000 bbl. is less onerous than the 55,000,000 bbl. of April, 1930; but is nevertheless oppressive, especially in view of the fact that the best estimates available foreshadow none of the usual year-to-year gains in consumptive demand during the coming five or six months.

Annual reports for 1930 that have come to hand have revealed severe inventory losses superimposed upon declining operating profits to result, in many cases, in deficits for the year. Further inventory shrinkage has been sustained this year and operating conditions can hardly be said to have improved, except perhaps in as far as some companies may have been successful in reducing expenses to offset, in part, smaller margins of profit. Some dividend revisions have already occurred this year, and others are not unlikely. All in all, the outlook for 1931 earnings is not, at this time, conducive to optimism with regard to the market prices for oil shares.

PRELIMINARY consolidated statement of Standard Oil Company (Indiana) shows net profit of $46,371,000 after depreciation, depletion, amortization, inventory adjustments and taxes, equivalent to $2.73 a share on the 16,996,595 shares of $25 par capital stock outstanding at the year-end. For 1929, $78,499,754, or $4.66 a share was reported in statement covering parent company only. Past policy has been to issue no consolidated statement. Early last month the Indiana company sprang a surprise on the Chicago gasoline market resulting in considerable indecision and hesitancy among competitors as to following its lead in reduction of service station price by 1 cent and introduction of a new grade of gasoline to sell 2 cents a gallon under the new price for the regular product. In an Editorial in the October, 1930, issue of WORLD

New York Stock Prices

1931 High	1931 Low	Current Div. $ per Annum	Stock	March 16 to April 18 Sales (Shares)	First	High	Low	Last	Net Change[1]
23⅝	15¾	1.00	Atlantic Refining (25)	80,700	19	20½	15¾	16½	— 3⅛
14½	9¾	1.00	Barnsdall "A" (25)	82,200	11⅞	12¾	9¾	10	— 2
3¼	1½	....	Colon Oil (No)	2,300	2¾	2¾	2	2	— ⅜
12	8	....	Continental Oil (No)	128,600	10	10	8	8	— 1⅞
3½	2⅜	....	Creole Petroleum (No)	17,400	3	3⅛	2⅜	2⅝	— ⅝
75½	58	1.50	Gulf Oil Corp. (25)	27,700	66	68⅜	58	58	— 6½
72	54½	2.00	Humble Oil & Ref. (25)	21,100	57	57⅝	54½	54½	— 1⅞
18¼	13½	††1.00	Imperial Oil, Ltd. (No)	27,100	15¾	16⅜	13½	13¾	— 1⅝
4⅝	3	....	Indian Refining (10)	19,600	3¾	4	3	3⅛	— ⅝
15½	11⅝	1.00	International Petr. (No)	76,400	12⅞	13	11⅝	11⅞	— 1⅛
20¾	10⅝	....	Mexican Seaboard (No)	432,200	17¼	20¾	15⅜	18⅞	+ 1⅞
19½	11½	1.00	Ohio Oil (No)	104,900	15½	16	11½	12⅜	— 3
36½	32	....	Pan Amer. P. & T. B. (50)	4,600	34⅞	35¼	32	32	— 3⅛
16⅝	9	....	Phillips Petr. (No)	163,400	11⅞	12½	9	9⅜	— 2¼
20⅜	12¾	2.00	Prairie Oil & Gas (25)	35,500	15½	16⅜	12⅝	12¾	— 2¾
11⅞	7⅜	....	Pure Oil (25)	35,500	9¼	9¾	7⅜	7⅜	— 1⅝
6⅜	2½	....	Richfield Oil (No)	37,000	4¼	4¾	2½	2½	— 1⅞
42⅝	32⅜	*3.20	Royal Dutch (N.Y.)(13⅓)	36,700	37⅞	39½	32⅜	33	— 4⅜
10¼	6½	....	Shell Union (No)	63,600	8	8⅜	6½	6⅝	— 1⅜
15⅞	10¼	1.00	Sinclair Consol. (No)	162,700	13⅝	13⅝	11¼	12½	— ⅝
12⅞	7¼	....	Skelly Oil (25)	14,900	9	9½	7¾	7¾	— 1⅝
51¾	42	**2.50	Standard Oil of Calif. (No)	130,400	46¼	46½	42	42½	— 2⅞
38½	30	2.00	Standard Oil (Ind.) (25)	145,200	32	33⅜	30	30	— 1¾
23⅝	19½	††1.80	Standard Oil (Ky.) (10)	33,000	22⅝	22⅝	19⅝	19⅝	— 2⅜
52½	40¾	‡2.00	Standard Oil (N. J.) (25)	385,300	46⅝	47	40¾	41¾	— 4⅞
26	20½	1.60	Standard Oil of N. Y. (25)	171,600	22⅛	23¼	20½	20¾	— 2⅜
45¼	39½	††1.00	Sun Oil (No)	2,600	40⅞	41½	39⅝	41½	.....
36¼	26⅜	3.00	Texas Corp. (25)	266,000	30⅜	31⅜	26⅜	27	— 3⅞
9	6	0.60	Tide Water Assoc. (No)	52,400	7⅛	7¼	6	6	— 1¼
26⅜	19⅞	‡2.00	Union Oil of Calif. (25)	36,200	22	23½	19⅞	20⅜	— 1⅝
69¾	49	4.00	Vacuum Oil (25)	40,400	57⅝	57⅝	49	49⅞	— 6
1⅞	⅞	....	Venezuelan Petr. (5)	13,400	1⅛	1¼	⅞	1	— ⅛

[1] Since close of last month's table. * Paid last year—no regular rate. † Including extras. ‡ Plus 4% in stock. †† Pus 9% in stock. ** Plus 2% in stock.

PETROLEUM it was stated that "As in other lines of industry there are sound reason for more than one standard of product and price."

At the annual meeting on May 7, stockholders of the Indiana concern are to vote on a proposal to reincorporate the company so as to make its charter subject to the new Indiana corporation statute of 1929, instead of the 1889 act which is now regarded as archaic.

THE end of 1930 saw the Standard Oil Company of New York in a very strong cash position, assets included $22,908,939 in cash and $22,504,998 in marketable securities. Inventories of crude and refined products stood at $136,707,056, carried at the lower of cost or market.

Net profit for 1930, including gas properties sold, was $40,246,198, or about $2.26 per share on 17,849,402 shares outstanding, of which $1.33 per share was from the gas property sales. In 1929 the New York Standard reported a net profit of $38,750,849 on 17,363,783 shares, but no gas properties were sold. Total fixed assets are $720,305,566, of which $459,-259,294 are fixed assets less reserves. Dividends paid aggregated $28,501,379, and the surplus now stands at $132,345,-997.

During the year the company paid Federal and other taxes of $11,090,952. In addition it collected and paid to several States gasoline taxes totalling $32,-224,520. If an average tax of 3 cents per gallon is assumed it means that the New York Standard sold over 25,500,000 bbl. of gasoline last year.

MEXICAN SEABOARD reported 1930 consolidated net profit of $605,873 after all charges, equal to about 48 cents a share on 1,244,383 shares of no par capital stock. The favorable comparison with the $28,850 deficit of 1929 is in sharp contrast with the great majority of oil company statements, and perhaps formed the basis for successful pool activity in the stock which resulted in a new 1931 high in the period covered by the accompanying tabulation when other issues were making new lows.

The company's principal activities are now in this country and a valuable natural gas contract with Pacific Gas & Electric covers output from the Kettleman Hills field in California where the company's subsidiary brought in the discovery well in October, 1928. Gross revenues in 1930 of $2,639,556 were 19 per cent below 1929 and total net income, before charges and special deductions, was off about 9 per cent. The gain over 1929 in final net profit was therefore largely due to lower charge-offs, including drilling expense and writing off of abandoned properties. An item of this sort of $2,498,535 was written off last year directly against surplus account instead of through earnings, representing liquidation of certain subsidiary operations in Mexico. Company's present gross is in striking contrast with the $23,000,000 figure of 1922 when Mexico was in its oil prime and company's activities were centered there.

MERGER between Sinclair Consolidated Oil Corporation and Rio Grande Oil Company, the latter a complete oil unit on the Pacific Coast, is once more under serious consideration following a lapse of nearly a year since the previous negotiations were abandoned. The Sinclair Company does not have representation on the Pacific Coast and would probably be glad to take this means of securing an opening there if satisfactory terms can be arranged. It will be remembered that Sinclair Consolidated and Bancamerica Blair Corporation participated last year in a syndicate which proved Rio Grande with a $5,000,000 revolving credit. H. F. Sinclair, chairman of Sinclair Consolidated, was recently elected chairman of Rio Grande Oil, and stated in this connection that he had accepted the invitation to become chairman of the latter company for the purpose of assisting its management and providing an opportunity for both organizations to ascertain whether or not it would be mutually advantageous to establish closer relations between them. The Sinclair Company has large cash resources available for expansion purposes as the result of $72,500,000 in cash received last year from Standard of Indiana from sale to the latter of Sinclair's half interest in Sinclair Crude Oil Purchasing and Sinclair Pipe Line Company.

THE curtailed output and low oil prices of last year, necessitating inventory write-offs in the final quarter, resulted in a sharp shrinkage of 67 per cent in net profit of Skelly Oil Company, although gross declined only 17 per cent. Net income after all charges was equal to $1,916,871 in comparison with $5,786,490 earned in 1929, equivalent to $1.39 and $5.28 per share of common respectively. After payment of 1930 dividends a deficit of $717,199 was transferred to surplus account. Financial position at the close of the year was fairly strong with ratio of current assets to current liabilities somewhat better than 2 to 1. The unfavorable earnings status resulted in omission of common dividend payments beginning with the first quarter of this year.

IT has been reported that the audit of Richfield Oil Company of California being conducted at the direction of the United States District Court will probably show larger charge-offs than had been anticipated. It has been indicated that unless changes are made in the final report the revaluation will eliminate entirely the $15,198,839 combined earned and capital surplus shown at the close of 1929 in the company's official balance sheet, and in addition result in a balance sheet deficit of close to $40,-000,000. Cities Service Company, which has been reported to have acquired over 50 per cent of the common stock has not as yet made any definite offer for the acquisition of Richfield and is not expected to do so until complete details of the company's status have been obtained. It is reported that Cities Service is engaged in an independent audit of the Richfield properties to assist them in making their final decision as to an offer of acquisition. At the present writing it has been indicated that there is little likelihood of either sinking fund requirements or interest payments on the Richfield 6 per cent first mortgage collateral trust bonds of 1944 being met when due on May 1. These payments would require a total of $1,209,000; and in addition, on June 15 there will become due interest and sinking fund payments of approximately $830,000 on the subsidiary Pan-American Petroleum first mortgage 6's.

C. C. BAILEY

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Petroleum Research

FINANCIAL support for the continuance of the program of fundamental research in petroleum, conducted during the past five years by the American Petroleum Institute, is being sought of the petroleum industry. W. C. Teagle, president, Standard Oil Company of New Jersey, chairman of the Committee on Research of the Institute's Board of Directors, has asked more than 400 oil companies for contributions to a $100,-000 fund to carry on the work of such a program. The five-year program, financed by John D. Rockefeller and the Universal Oil Products Company, which ends this year, has provided a large quantity of valuable data. It is proposed to begin the new research program July 1, and funds will be expended under the direction of the committee.

SHIPPING

London:

THE Institution of Naval Architects recently held their meetings in London. The question of International Load Line has bulked very largely both in the papers read and in the consequent discussions. While a great deal of the subject matter is not of particular interest to tanker owners, there are one or two points worthy of comment. Sir Charles Sanders read a paper entitled "The Establishment of an International Load Line," mainly of a historical nature.

J. Foster King of the British Corporation went more deeply into the question of tank ships. European owners for some time, Foster King considers, have been convinced that the invulnerability of hull and other features of a tanker are clear justification for reduced freeboards; but owing to the existing European Load Line Regulations they had no direct experience of what increased loading would mean. It has devolved on the United States to produce the required evidence as to the amount of extra immersion which could safely be granted to tankers. Mr. Foster King considers that as America owns about 2,500,000 tons, or one-third of the whole tanker tonnage of the world, and has never been restrained by any Load Line law, American owners have had every opportunity of arriving at a satisfactory maximum loading figure by trial and error. Numerous instances of deep loading have proved satisfactory, but according to Mr. Foster King, America has been prepared to accept a reduction on freeboard which may be stated as being 20 per cent of the ordinary freeboard in the case of 400 to 440 ft. tankers.

After much discussion the recent Load Line Conference agreed to a reduction which ranges from nothing at 200 ft. to 16 per cent at 60 ft. and corresponds to about 14 per cent in the 400 ft. to 440 ft. vessel in ordinary service and 10 per cent on North Atlantic winter service, subject to compliance with conditions of assignment which represent best modern tanker practice. Foster King feels that this compromise does not err on the side of generosity and feels that this is proved by the American suggestion that American owners should be free to raise the question again before the expiration of the normal 5-year period provided by the Convention. It was rather disappointing to note that in the discussion the tanker fraternity did not bulk very large, whilst those who were present said very little. It is, however, pointed out that the full ventilation of this question of tanker freeboard is valuable at the present moment when there is almost a complete absence of new orders and when therefore improved and modified designs can be considered.

Sun shipyard, Chester, Pa., where many oil tankers are built
(© Acme Service)

New Construction

ONLY one order has been placed since these notes were last compiled. This is for the 6,000 tonner that the Burmah Oil Company has placed with Swan, Hunter & Wigham Richardson, Ltd.

Completions and Trials

WITH regard to new completions, the Anglo-Saxon Company has recently taken delivery of the AGNITA, a vessel of 4,600 tons deadweight to which frequent reference has been made in these columns. The ship underwent successful trials a few weeks ago and immediately left the Tyne, where she was built, after commissioning under the Dutch flag, for New Orleans, La., where she was due to load a cargo of butane.

This ship has a deadweight tonnage of 4,600 tons on a load draft of 23 ft. 3½ in. and is one of the most important and unusual tankers that have been constructed in this country during the last few years. It was originally announced that she was intended to carry sulphuric acid in bulk in domed vertical cylindrical tanks and

to carry crude oil in the spaces between the tanks and the hull.

It is now stated, however, that in addition to sulphuric acid, she will carry "special cargoes" which may be taken as a generic term for certain new products that the Anglo-Saxon group is probably developing. The ship can carry a full cargo, i.e., be loaded down to her full draft marks, with either oil or special cargo in the tanks. Provision is made so that the cargo in the cylindrical tanks can be carried under pressure and can, in fact, unload itself. Accommodation for twelve passengers is provided and she will be used also to carry Shell officials to Central America. She presents a most unusual appearance with the domed tanks sticking up above the main deck.

It is understood that the Anglo-Saxon Company was almost inundated with requests for invitations from interested parties to go on the trial trip of this tanker; but ocnsiderable secrecy was observed and no one was on board except Company directors and officials. This vessel is propelled by a Werkspoor 4-cycle single-acting continuously supercharged Diesel. The single screw has behind it a balanced reaction rudder. The trials of the vessel proved most satisfactory and she is stated to be able to maintain, owing to her supercharge, a speed in the neighborhood of 12½ to 13 knots.

Working at a higher rate of revolutions, two engines of exactly similar type to those in the AGNITA, will form the power plant of the new 10,000-ton twin screw vessels at present under construction for the Anglo-Saxon Company, the first of which have now been launched.

Trials took place recently in Spain of the 10,000 ton tanker CAMPOAMOR, built by the Compañia Euskalduna de Construccion y Reparación de Buques, Bilbao, for the Spanish Petroleum Monopoly. This vessel was designed by Sir Joseph Isherwood and Company, and was constructed on the Isherwood longitudinal system. She has twin screws and is propelled by twin M.A.N. 7-cylinder Diesels, the total horsepower at 125 revolutions being 3,200; she made 13.8 knots light on trials. She is the second tankship so far built and completed in Spain, but three others are now in course of construction, two at Cadiz and one at Valencia.

Brest as an Oil Port

IT is announced that very shortly a scheme will be inaugurated to transform Brest into an important oil port at a cost of 100,000,000 frs. It is stated that eventually the probable imports of crude oil will be between 300,000 and 400,000 tons per annum of which 250,000 to 300,000 tons will be refined and re-exported by sea in the form of fuel oil, petrol, etc. A large storage depot is to be constructed together with a refinery, berths for tankers, pipe lines and bunkering berths. This development, if it goes ahead, may prove to be useful in the long run to shipbuilders, particularly as such a development would require numbers of lighters, tugs and small craft, as well as necessitating a further slight addition to the world's tanker fleets.

Chartering

THE freight market still remains quiet, although within the last few weeks there have been several bright spots. With regard to clean oil, 16/9d. has been paid for a 8,500 tonner, Black Sea to Vladivostock, April loading. A 7,500 tonner from California to Shanghai was also fixed for prompt loading at 34 cents a barrel. The new Dutch built motor tanker MIJDRECHT of 9,500 tons has been fixed for an April-May loading, Black Sea-French Atlantic ports 7/- refined and/or benzine. The dirty oil market has been very quiet whilst practically the only item of interest to report in the time charter market is a steamer of about 10,000 tons deadweight which has accepted 3/9d. for six months' dark oil American coasting. A 9,000 tonner was recently fixed loading early April for crude oil from Aruba to Teneriffe at 6/-. There is also a loading at similar date for a large tanker from Batoum to Leningrad 10/- fuel and/or Diesel oil.

A. C. HARDY.

The U. S. A.

THE ninth electic tanker and the 13th Diesel-electric vessel to be built for the Atlantic Refining Company is now under construction by the Sun Shipbuilding and Dry Dock Compay of Chester, Pa. This vessel, to be completed late this summer, has the distinction of also being all-electrically welded in her hull construction.

Nine tankers and four tugs make up the total of 13 Diesel-electric vessels owned by this company. Of this number, the electric equipment was supplied for eight (including the new one) by the General Electric Company, and for three more by the British Thomson-Houston Company, an affiliated company in Great Britain.

The owner plant of the new tanker will consist of three Cooper-Bessemer Diesel engines each driving a 105-kilowatt, direct-current generator, two with direct connected auxiliary generators of 25 kilowatts capacity each. The main generators will deliver current at 125 volts and the auxiliary generators, at 120 volts. The propultion motor will be rated 375 horsepower, 375 volts, 150 r.p.m., and will be a shunt-wound, d.c. machine. The vessel will have pilot house control.

Last year the Sun Shipbuilding Company constructed and delivered six 14,800 ton dwc. Diesel driven tankers, one big steam tanker and two small Diesel tankers. Now building for delivery this year are three large Diesel tankers, five welded gasoline barges and two riveted gasoline barges, as well as the welded Diesel-electric tank boat for the Atlantic Refinery.

Whaling Vessels

FOLLOWING an eight months cruise covering 25,000 miles, the whaler Sir James Ross arrived in New York during mid-April. She had a cargo of 55,000 bbl. of whale oil valued at between $1,500,000 and $2,000,000 from a capture of 1,444 whales. The cargo was consigned to Procter and Gamble, the soap manufacturers. She was followed by the Larsen, a sister ship, a few days later.

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Book on Oil Industry Buying

IN his work "True Values in Business and Buying" Mr. G. E. Padel has drawn on his rich and varied experience as a purchasing agent to illuminate some vital truths, disregard of which is the source of endless trouble, loss, and hard dealing that defeats itself.

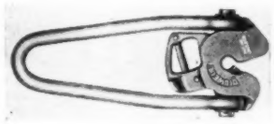
It is not a book merely for the purchasing agent. It carries a weighty message for the heads of the firms whose money the buyer spends. The ablest and best intentioned purchasing agent cannot properly render his best service unless the men behind and above him also have some conception of the philosophy and psychology of buying as Mr. Padel expounds them, and his book can be heartily recommended to executives of oil companies as well as to their subordinates who are on the buying line.

The purchasing agent who reads Mr. Padel's book will find it an illuminating and instructive discourse on buying not only as a business but as an art, a genuine art that may be lifted far above deadening routine when divested of forms that are purely mechanical and pointless. It will give him wholesome and worth while viewpoints on the real objects toward which an able buyer will strive at all times.

New Equipment and Engineering Information

Sucker Rod Elevator

The Oil Well Supply Company announces the development of their Imperial Sucker Rod Elevator. (See illustration.) In its design three major objects were accomplished—simplicity, strength and convenience. Months of field tests have proved that this elevator is exceptionally efficient. There are few parts in the assembly and all are



easily accessible. All working parts are protected against clogging from paraffins or dirt. The Imperial Elevator has a capacity enabling it to carry the longest string of rods.

The convenience of operation is the outstanding feature of this elevator. After stabbing, rods cannot be released except at the will of the operator. No extra motion is needed to release the latch—simply "squeeze the handle and disengage the elevator." Protection for the operator's hand and a thumb brace are provided. This elevator will accomplish economy and speed in the handling of sucker rods. Made in two sizes: 5/8" x 3/4" and 3/4" x 7/8". All parts for both sizes are interchangeable except the finished body.

Rotary Mud Screen

Because of the great amount of interest shown at the Tulsa and Los Angeles Expositions, in the use of the Link-Belt vibrating screen for reclaiming rotary mud, Link-Belt Company has issued a new folder, No. 1253, describing this unit.

The Link-Belt vibrating screen provides an effective economical method of reclaiming, degassing and cleaning rotary mud. It saves wear and tear on pumps and valves by eliminating rough cuttings and sand from the mud and preventing the possibility of the drill bit plugging up, or of the tools sticking in the hole through the interruption of circulation. When gas is present the mud becomes "gas cut," and unless the gas is removed from the mud before it is recirculated, the normal weight per gallon is reduced, and it becomes too light to be of further use, and must be thrown away at considerable loss, or doctored up. The Link-Belt vibrating screen reconditions the gas cut mud and is an ideal means for controlling the weight of the mud, thereby avoiding the danger of blowouts.

This folder illustrates and describes the method of using this screen, which has been adopted by many drillers in New Mexico, Texas, California and elsewhere.

A copy of this interesting folder will be sent gratis upon request to the company.

Tagliabue Level Indicator

The new level indicator of the C. J. Tagliabue Mfg. Co. shown in the accompanying cut incorporates electric contacts for operating signal lights in the control house and, inasmuch as open contacts are barred in most oil plants, sealed mercury

contacts are used. These contacts, however, must be kept at a certain distance from the flange face so as not to be affected or destroyed by high temperature at the flange. The tilt switch holding the mercury bottle is therefore pivoted on the end of a bracket so that it is more than a foot away from the flange. The movement of the float after being suitably reduced operates a rocker-arm on the spindle and the motion of the rocker-arm is communicated to the mercury tilt switch by a long connecting link or rod.

This same motion also revolves a spindle which ends in the long red pointer causing it to move across the scale. This indication can be read at a considerable distance and can be used dependably to guide the operators in maintaining their proper level even if a breakdown of the electrical current put the signal lights in the control house out of commission.

The stuffing box at the flange end of the device is packed with high temperature resistant material. It is designed so that it cannot be made to bind. A normal accumulation of coke would not stop operation, for the controller is so designed that the float movement of 8" is so greatly reduced that tremendous power is developed in the leverage, sufficient to break up an ordinary coke formation.

An air pilot valve may be incorporated in the construction making the device a combined indicator and level controller. The float, not shown in the photograph, the float arm and all levers and parts in contact with the oil are made of stainless steel.

New Rod Hooks

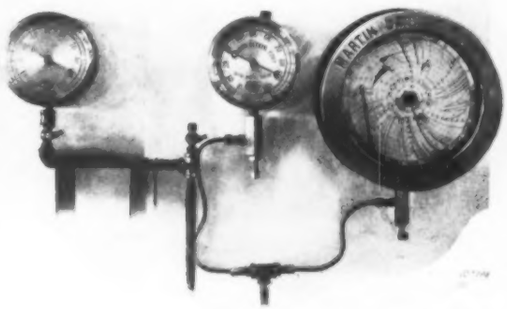
Byron Jackson Co., of Los Angeles, California, have just placed on the market two new rod hooks which they recommend as superior to anything previously offered for the safe and speedy handling of rods, designed particularly for the increased length of strings of sucker rods used today in deeper wells.

The smaller hook, which is designated as the BJ "15" is recommended for a safe load capacity of 15 tons—this weight being the equivalent of a 17,000 foot string of 3/4" sucker rods complete with couplings; the larger hook, designated as BJ "20" has a safe load capacity of 20 tons, being the weight of a 23,000 foot string of 3/4" sucker rods complete with couplings.

A unique feature of construction of these hooks is the locking arm which extends outward from the bill of the hook and closes automatically when the elevator bail is taken. This locking arm cannot, thereafter, be unlatched except by the operator, and not fully opened until the load is removed. By connecting the bill of the hook to the body, a closed link is formed with resultant strength not possible in an open type hook of equal size and weight.

The rigid construction of this locking arm further eliminates all possibility of the elevator bail jumping clear of the hook, or striking against and breaking safety latch attachments.

Descriptive illustrated literature may be obtained by addressing Byron Jackson Co., P. O. Box 1307 Arcade Station, Los Angeles.



Pulsation Dampener,—See page 354

Pulsation Dampener

THE Martin-Decker Corporation has designed an adjustable pulsation dampener used on their mud pump gauge in a "Utility" model adapted for throttling the pulsations of compressors and pumps of all types. Due to its adjustable feature this device may be used either for a few inches of water or for 2,000 pound gauge pressure. While damping out all vibration, there is no appreciable time lag. It is immediately sensitive to either a large or small change in pressure and the gauge always indicates the true mean pressure. It is easily cleaned without disturbing the connections. The accompanying photograph shows a gauge and recorder fitted with this device connected in parallel with an unprotected gauge (at left) on a compressor line. The severity of pulsation can be seen easily from the blurring of the unprotected gauge hand and from the wide chart record visible just above the recorder pen made when the dampener is adjusted to wide-open position. The recorder shown is fitted with a half-hour clock, so that each quarter hour division represents but eighteen and three-quarters seconds. The immediate response of the recorder to pressure changes from the maximum to zero can be observed.

Additional information will be furnished by the manufacturer upon request.

Distant Gauging

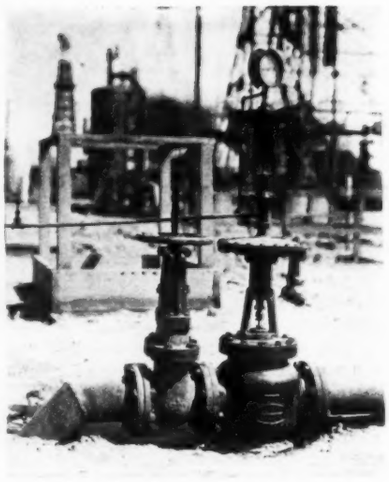
THE "Telegage," offered by the S. K. Telegage Company, Philadelphia, is a hydrostatic distant reading gauge which measures any liquid anywhere under any conditions. It is used in many industries including modern oil refineries.

New Pilot Control

A FUNDAMENTAL change in the design of pilot control for pressure regulators, liquid level controllers, or hand remote control has been released after several months of development by Natural Gas Equipment, Inc. Petroleum Securities Bldg., Los Angeles, Cal.

It makes the use of a reducing regulator to maintain a constant auxiliary pressure unnecessary, is free from interruption of service, and eliminates continuous bleed.

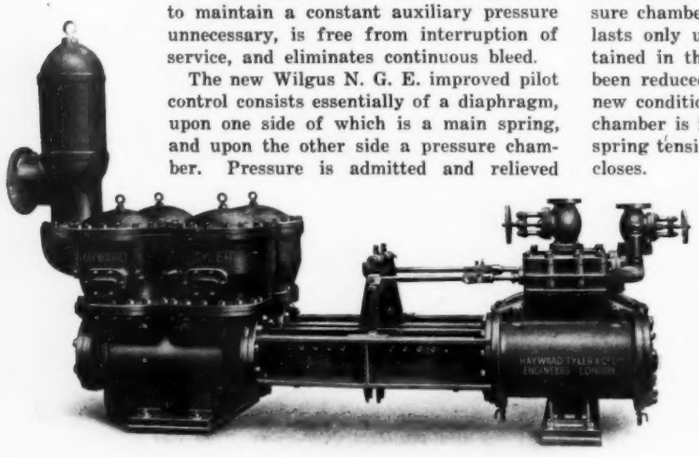
The new Wilgus N. G. E. improved pilot control consists essentially of a diaphragm, upon one side of which is a main spring, and upon the other side a pressure chamber. Pressure is admitted and relieved from the pressure chamber by a tandem inlet and relief valve, made in one piece and centrally guided. The entire moving element of the control floats upon frictionless ball bearings.



Wilgus N. G. E. Improved Pilot Control installed on a back pressure regulator at Santa Fe Springs.

A push applied by the actuating mechanism compresses the main spring. The diaphragm and its stem, which is hollow and carries the seat of the relief valve, acts to back the inlet valve from its seat, admitting pressure until the force acting upon the diaphragm is exactly balanced, when the inlet valve will close, communicating the same pressure to the diaphragm of the main valve which the pilot control is to operate.

If a change occurs which reduces the actuating force, the pressure in the chamber overcomes the tension of the spring and the diaphragm assembly moves in the direction of the thrust rod. Since the inlet valve is closed and cannot follow this movement, the outlet valve seat separates from the valve stem, and allows pressure to vent from the main diaphragm through the pressure chamber to atmosphere. This venting lasts only until the pressure already contained in the main diaphragm system has been reduced sufficiently to conform to the new condition, and the pressure within the chamber is in equilibrium with the reduced spring tension, when the outlet valve again closes.



Cargo Oil Pumps

A NEW type of duplex cargo oil pumps especially designed for bulk handling of the light motor spirits now being regularly transported by the Anglo-Saxon Petroleum Co. of London has been installed on twenty of the above mentioned Company's tankers by Hayward-Tyler & Co. of London and Luton. These new pumps are now being manufactured by Hayward-Tyler in six sizes, from 14 x 12 x 24 to 20 x 16 x 24.

O'Bannon Sucker Rod

DURING the past year or two the use of hardened sucker rod joints has been becoming more general. The Walter O'Bannon Co., Tulsa, have manufactured sucker rod sockets for many years, but found that the conventional socket with wickered slips would not work satisfactorily when it was necessary to engage one of these hardened couplings. The coupling itself was as hard as they could make the slips, and the success of the slip socket depends upon the slips cutting into the metal of the catch.

This new socket is constructed on the trapping principle, engages the shoulder where coupling and rod meet and thus does not depend upon a friction or gripping hold. The socket is made to catch four sizes of case hardened boxes in 2-½" tubing. It hasn't been made as yet to work in 2" tubing. The socket has been in use in the field now for a few months, and reports have come in of its handling a 7000 foot string of ¾" rods satisfactorily.

Trolleys and Hoists

ROBBINS AND MYERS, INC. (Hoist and Crane Division), of Springfield, O., announce their Bulletin 5025 covering their complete line of Ace trolleys, and hand and electric hoists and cranes of every type.

New Indicating Controller

THE Brown Instrument Company, Philadelphia, has published a broadside describing and illustrating its new indicating control instrument for automatically controlling relatively high temperature processes and units such as heat treating furnaces, enameling furnaces, oil stills and towers.

DR. O. W. WILLCOX.

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